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ON

THE PASSIVE MECHANICAL FACTOR IN HEART DISEASE:

*ITS INFLUENCE AND MANAGEMENT.**

BY

ALEXANDER BLACKHALL-MORISON, M.D.,
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CONSULTING PHYSICIAN TO THE GREAT NORTHERN CENTRAL HOSPITAL; CARDIOLOGIST TO MOUNT VERNON HOSPITAL.

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By the "passive mechanical factor in heart disease" I understand the conditions which promote or impede the effective exercise of the active factor—the cardiac muscle. The matter so defined is, obviously, both physiological and pathological, and its adequate treatment might well occupy several lectures instead of one, but I shall endeavour so to deal with it that its practical importance may be apparent without claiming for it more than its due weight.

In his interesting Linacre Lecture on the "Law of the Heart," delivered in 1915, Dr. Starling has endeavoured to show the great adaptability of the heart in dealing with a wide variation in the quantity of blood it receives, in spite of much difference in the arterial pressure it has to overcome, and he experimentally tries also to demonstrate that the physiological law applies in disease when, in addition to variations of arterial resistance, mechanical disabilities, such as destruction of the aortic valves, is brought about. The output of the ventricle, within certain wide limits, remains the same provided the inflow be constant. Although under these circumstances altering the arterial pressure has no influence, a great effect is produced by varying the inflow. Increased inflow is associated with increased outflow, and there is no damming up of blood on the venous side. These conditions Dr. Starling illustrates by an ingenious heart-lung preparation, as he terms it, which he described in his lecture.

It must, however, be noted that, although Starling's detached or eviscerated heart disposes of large or small amounts of blood, with the same *sang-froid*, its *rate* is in no ways varied. It slogs at the same monotonous pace whatever work it has to do. This is not so *in corpore*. While, therefore, the heart may show, by some augmentation of total chemical changes, that it does more active work the larger the amount of blood it has to dispose of, there is evidently a passive factor in the situation which must be recognized.

Hill and Barnard, whose work on gravitation in the circulation is well known, maintain that the principle of the siphon is not applicable to the vascular system, as the arteries on the one hand and the veins on the other are of such different distensibility and elasticity.[1]

But does this conclusion, even if correct, apply to the lesser or pulmonary circulation? Hill[2] presses the analogy of the "rheochord" to the siphon as affecting, in any case, the systemic circulation, on account of the innervation of the vascular system. In the case of the cerebral circulation, however, even after the demonstration of its rich innervation, which I gave in 1898,[3] he maintained the Monro doctrine, and, so far as I know, does so still. Bradford has also shown that the pulmonary circulation responds to nervous stimulation, but there is little doubt that both the pulmonic and cerebral circulation have, for physical reasons, a large passive element in their conduction.

In an exhaustive consideration of asphyxia neonatorum which was published in the *Lancet* of 1894, like Dr. Starling, I also constructed a heart-lung apparatus, but with the dead heart of a sheep, a system of tubes, and a lung bottle, which convinced me of the important rôle of the passive force of gravitation in the circulation as distinguished from the active forces of aspiration and propulsion. Still earlier, in 1878,[4] an anatomical comparison of the heart and vascular system of the quadruped and man appeared to me to argue the greater ease in the conduction of the erect as compared with the horizontal circulation.

But the investigation of the conditions of the pulmonary circulation is one of the most difficult tasks the physiologist can set himself, as is acknowledged in Tigerstedt's exhaustive article on the subject.[5] It has nevertheless been reasonably concluded that the pressure variation in the pulmonary circuit is much less than in the systemic circulation and the velocity of the blood greater.[6]

In the supply from the right to the left heart a passive siphonage appears to play a large part, and, while a chemical estimation of cardiac energy may show, as I have stated, greater work on the part of the heart, the passive force referred to probably makes the efficiency of that organ under the circumstances possible. What, however, the experimental physiologist, with all his ingenuity and skill, fails to accomplish is at times brought about by what I have termed the vivisection of disease. In an address given to the Æsculapian Society of London, on cardiac motion as revealed by the vivisection of disease,[7] I gave full particulars of the clinical history and necropsy of a case of sarcoma of the heart, which placed the right auricle and ventricle out of action, and in which the circulation was for long maintained by the left side of the heart alone. The patient ultimately died without giving any evidence of the anasarca or effusion into serous cavities which so limited an amount of cardiac activity would *a priori* have suggested as probable. The only portions of the right ventricle which could by any conception be regarded as effective were the right ventricular aspect of the septum ventriculorum and a small portion of the posterior wall.

That the circulation was effectively carried on thus for a considerable period is evident from the degree in which the heart was involved in the morbid process. It was not merely pushed aside by or adherent to the growth, as frequently happens, but was involved in it and replaced by it, a process requiring time. The aspiratory and propulsive aid of the right chambers of the heart may, therefore, be regarded as having been extinguished, and the process of their extinction was clinically marked by the gradual silencing of a rough tricuspid bruit—a bruit of tricuspid fixation—which was a marked feature of the case in its first period. The *cadaver* showed no oedema of limb or excess of fluid in the peritoneal cavity; 13 oz. of blood-stained fluid found in the right pleural sac could be accounted for by local conditions. Both lungs were adherent to the ribs and the base of the left to the diaphragm. No more striking evidence, in my opinion, of the passive force in the transmission of the blood from the right to the left heart could be conceived, and sections of the growth show that both the conus arteriosus and the aorta were held by it as in a vice, encroached upon but, of course, not occluded.

In this connexion I may also mention the conditions of the fetal circulation and of cases of dextro-cardiac malformation which survive in some cases to middle and even old age, and in others are so malformed as to render any length of life impossible. Communication with the left heart may be free, but active propulsion remains the rôle of the right heart. The passive siphon of the pulmonary circulation fails to be established or to be only inadequately established, and the length of life of the bearer of the lesion is in proportion to the dextro-cardiac activity thus imposed, although the most cardiacally malformed fetus, under the hydraulics of its circulation *in utero*, may come into the world well nourished and generally well developed. The maternal circulation, while anatomically distinct from that of the fetus, is so related to it, through placental pressure, as to transmit to it not only oxygen, but also nutriment and hydraulic force. In this case, whether the placenta be at a higher level than the fetal heart or below it, the passive pressure from a higher source remains, and the circulation is well maintained until pulmonic siphonage becomes due.

It has frequently been stated that there is a marked difference between the development of the dextral chambers in the fetal heart before and after birth, but at term the relative muscularity of the right and of the left chambers of the heart is very much that which it is in extrauterine life. I show a specimen to demonstrate this fact, obtained from a child 7 days old, who died of atelectasis pulmonum, and in whom the heart was normal.

[3103]

* Delivered before the Edinburgh Branch of the Association on February 27th, 1920.

The fetal communications will be seen to be still pervious. On this subject Dr. George Alexander Gibson wrote interestingly, and it is a pleasure to me to recall his genial personality and his valuable work.[8]

The Oliver-Sharpey lecturer of 1911 and the Lumleian lecturer of 1917 both made merry in their orations over what they were pleased to consider "back pressure," an ancient and erroneous conception as a cause of cardiac failure discarded by the greater acumen of that new cardiology, of which they regarded themselves as exponents. The back pressure which they triumphantly demolished was, however, a creation of their own imagination. For no one ever called in question loss of power in cardiac muscle as being the cause of its failure. That waning power is, however, unquestionably the outcome in many cases of the additional work imposed upon it by mechanical passive defects. The Lumleian lecturer, however, remarked, "We do not fully understand the underlying causes of oliguria in cardiac cases, any more than we know the exact mechanism of cardiac oedema," and, unless the principle of the passive force in the lesser circulation be grasped and that of stagnation or back pressure be appreciated, it will be difficult, in my opinion, for anyone to find a satisfactory solution to these questions. By its aid the matter becomes clear.

One of the earliest signs of failure in the easy current from the right to the left heart is the occurrence of a reversible crepitation at the base, usually in the first instance, of the left lung. There are sufficient anatomical reasons, as I long ago pointed out,[9] for the selection of this site. The patient manifesting it on left or right decubitus, as the case may be, by a single revolution on his own axis loses it in the uppermost lung.[10]

The French with their customary happiness of expression have termed this sign "*oedème à bascule*," a see-saw oedema. It is the first evidence of stagnation in the left horn of the pulmonic siphon. Normally this siphon carries the blood to the left ventricle, where, like a well-judged leg hit, the haemic ball is easily lifted into the far field of the arterial stream. But when the cricketer, the left ventricle, is fatigued, there is a degree of impotence in the stroke which declares failure, and the evidence of this is noted by the sign in question. It is the first stage in a stagnation which gradually extends or may extend to the whole venous inflow as ventricular effort wanes, and may, as we shall presently learn, even develop into a powerful retropulsion into the superior caval venous system and also into the abdominal venous cistern, of which the inferior cava is the mouth. Both the cardiac lung and the cardiac kidney are explicable by a recognition of lessened arterial impulse and increased venous sluggishness.

The heart, suspended in the thorax within its pericardial sac, has a certain relation to lungs, diaphragm, and thoracic parietes. Under normal circumstances these relations are perfectly adapted to allow, without friction, the limited changes in position and dimensions which occur in systole and diastole. These perfect relations may be disturbed by the genesis of states in which the normal territory of the heart is invaded or encroached upon or in which the heart itself oversteps its boundaries. By such encroachment or excursion the free and unhampered systole and diastole in the upper and lower chambers of the heart are interfered with, and, to use an engineer's phrase, which has also been used in this connexion by that master of the English language, our President, Sir Clifford Allbutt, the "sweet run" of the mechanism is replaced by friction, effort, impediment, and disadvantage. Even the beneficial action of agents which would otherwise prove successful in removing disability may from such passive causes be rendered nugatory.

The *exocardial* conditions which aid or interfere with this sweet run of the machinery, may be conditions of negative or positive pressure within the chest, intrathoracic inflammations of various kinds and in various phases, neoplasms, distortions of the cage in which the heart is contained and works, and certain developmental states, in which the viscera are transposed.

Hypermyosis, excessive hypertrophy or *cor bovinum*, is usually of endocardiac origin or of this combined with exocardial tethering, but, as *cor bovinum*, its bulk alone in relation to the thoracic contents and wall may be regarded as an exocardial excursion beyond the normal boundaries of the heart. From mere bulk it may be one of the factors deranging the smooth working of the organ and provoking signs of cardiac difficulty or distress.

Intrathoracic pressure under normal circumstances is always negative, but is at its maximum in inspiration and at its minimum in expiration. Inspiration is aspiratory from the venous cistern into the chest, and expiration is propulsive towards the left heart. The greater the inspiration the more the retention of blood in the chest by the thoracic vacuum, and, in dyspnoeic conditions, inspiration gains the upper hand, tending to dilate the auricles and to a less extent the ventricles, but the thin-walled upper chambers naturally feel this force most. This is well shown on a model devised by Herman.[11]

The asthmatic, with his prolonged expiratory snore or wheeze, acquires a fixity of chest which impedes the venous inflow, and experience teaches us that this condition may be most promptly dealt with by a rhythmical compression of the chest in the expiratory phase of respiration. In some cases I have prescribed nothing else, when the chest has retained resiliency.[12]

What we may at any time demonstrate in the dyspnoea of the asthmatic we also see in that of the cardiopath, and here, when lung and heart are fixed by adhesions, impeding the rhythmical play of the former and the contraction or systole of the latter, we have to deal with conditions which induce in many cases a hypertrophy of heart which causes that organ, by its mere increase in muscle and its greater blood content, still farther to disturb the balance between the respiratory and circulatory pumps.

In these circumstances we may struggle in vain to relieve the burdened and tethered heart by cardiac tonics or by any other means, but may, by affording the organ more room to act in, transform in some cases a hopeless condition of embarrassed circulation into one of comfort and convalescence by cardiolysis or thoracotomy. To this point I wish to draw particular attention because of its great practical importance.

Brauer of Heidelberg first practised cardiolysis for symphysis cordis in 1902,[13] and I used the same method for hypermyosis without symphysis in 1907.[14] I have now had considerable experience in precordial thoracotomy, but a detailed discussion of the measure is not possible in this place. I wish, however, to state with all the emphasis in my power that the surgeon may here at times, under the guidance of the physician, very effectively come to the aid of the latter, and shall relate one experience on this point which will speak for itself.

Just as the indication for most fruitful venesection is a degree of venous turgidity which is associated with cyanosis, so the best guide to precordial thoracotomy is an amount of systolic movement in the costal or sterno-costal thorax which is the necessary consequence of an enlarged and usually adherent heart. For obvious reasons this is best seen in the young, in whom also a permanent precordial bulging may indicate the adaptation of a mouldable cage to its enlarged cardiac content. With such adaptation there may be an absence of signs warranting thoracotomy. The *modus operandi* of the measure is simply the relief of intrathoracic pressure resulting in greater mobility of heart and improved siphonage, the more resilient the chest the better the result as a rule, which is not, however, without exceptions.

The question of an anaesthetic has given me much concern in these cases, and I have known one to die on the table under general anaesthesia before operation could be undertaken. But that anxiety is now a matter of the past, for I have found that local anaesthesia serves every purpose and is safe. In the following case the measure indicated definitely saved life.

F. P., aged 10 years, was admitted under my care to the Great Northern Central Hospital on February 11th, 1919, with a history of having suffered six weeks previously from rheumatic fever, and of having been confined to bed since. On admission he merely complained of pain in his arms and legs, but his face had begun to swell. The temperature varied from 98° in the morning to 99° in the evening; the respirations ranged from 24 to 26, and the pulse from 96 to 120. It had evidently not been his first attack of rheumatism. The area of cardiac dullness was large, and he had a well developed apical systolic bruit. The lungs were, however, clear, and the urine free from albumin. There was visible and palpable pulsation from the fourth to the sixth interspace, and the cardiac impulse heaved the thorax. A rough systolic bruit was audible at the apex, traceable to the left and heard in the back. The second sound was accentuated in the area of the pulmonary arterial cusps,

and in the aortic area was closed. He improved under treatment, and a month later was sent to a relief hospital in connexion with the Great Northern Central, but was readmitted on April 23rd, 1919, with a history of having exhibited swelling of the face and abdomen two weeks previously. He then showed enlargement of the liver with effusion into the peritoneal cavity, and crepitation and rhonchi on auscultation at both pulmonary bases.

By radiography the cardiac area was seen to be much enlarged (Plate, Fig. 1) and free fluid was removed from the abdomen by paracentesis on April 24th. The patient, who was all this time confined to bed, was taking digitalis and continued to do so, fruitlessly, for the following month. During this time his condition became steadily worse and his legs and body generally anasarcous, the liver enlarged in size, the peritoneal effusion reaccumulated; there was effusion also in the left pleural cavity, the urine became albuminous, and I regarded the condition of the patient as hopeless.

Believing I had to deal with an enlarged and adherent heart, I advised cardiolysis as the only hope of altering the situation, but expressed a cautious prognosis as to even temporary benefit, stating that, so far as I could judge, death was otherwise inevitable. After some days' reflection the parents consented to operation, and I asked my colleague, Mr. Barrington-Ward, to remove ribs and cartilages in the area of maximum impulse to the left of the sternum. I stipulated, however, that the operation should be performed under local anaesthesia, as I did not consider that the patient could survive a general anaesthetic.

Operation.

On May 23rd, 1919, portions of the sixth and seventh ribs with their cartilages were removed. The periosteum was not peeled off the pleura, but was divided to relieve tension. The left pleural cavity was accidentally punctured and fluid escaped, air at the same time being sucked in on inspiration. The puncture was closed by suture. The patient cried a good deal during the operation, but confessed afterwards that he had been more frightened than hurt. I confess that, even after the operation, I was not sanguine of any striking benefit, and was, consequently, astonished by the result, which was chronicled, to my dictation, in the notes of my house-surgeon, Captain Huxtable, M.C., as follows:—"29/5/19 (that is, six days after the operation): pulse 108, regular; respirations 36; anasarca entirely disappeared; no free fluid in peritoneum; no swelling of face; subjectively quite comfortable; sleeps quietly, which was not the case previously."

The use of digitalis was continued after the operation and later abandoned. When it had been left off for a time there was some return of peritoneal effusion, the liver remaining enlarged. The fluid was drawn off, the digitalis resumed, and the effusion did not recur. The pulse throughout was regular, but of rather high rate (112–120). The patient was later removed to Mount Vernon Hospital, to be under my care, and is there now, more as a convalescent than as a patient (Figs. 4 and 5). He travelled to London recently for the purpose of radiography, and I exhibit the radiograms made. The chief

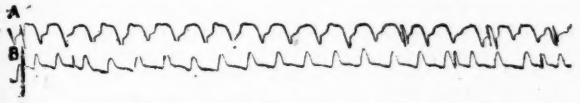

FIG. 5.—A, Cardiogram. This case having been a low thoracotomy (sixth and seventh ribs) and the periosteum not having been removed, the systolic excursion of the ventricular systole is not so pronounced as in a higher thoracotomy. B, Radial pulse of low tension.

difference these exhibit is in the diminished distension of the right heart and a clearer distinction between it and the diaphragm on the right side in those taken after the operation as compared with the skiagram taken before operation, in which an inclined plane runs from the right heart directly into the liver shadow (Plate, Figs. 2 and 3).

Present Condition.—He has gained 9 lb. in weight since admission; pulse regular, rate 84 and of good force. There is heaving pulsation in the precordium, including the lower half of the sternum. The area of cardiac dullness is 5 in. by 7 in., the right border of dullness extending 2 in. to the right of the mid-sternal line. The apex beat is in the fifth space 3¼ in. from mid-sternum. A systolic bruit of musical pitch is traceable to the left posterior axillary line and as far as mid-sternum to the right. The bruit is audible also in the back and loudest in the left paravertebral groove. The second sound is accentuated over the pulmonary arterial valves and is normal in the aortic area, the sigmoid valves closing. The respiratory rate is 30, the pulmonary auscultatory signs are quite normal, as are the dimensions of the liver. There is no abnormal effusion into any tissue or cavity. The systolic blood pressure is 95 to 100 mm. of mercury and the diastolic 65 to 70 mm. He takes moderate exercise without any discomfort.

Nothing further need be said of the other *exocardial* conditions mentioned than that their effect is to crowd intrathoracic space and disturb the balance of pressure within the thorax, as well as to hamper the action of the heart, and deprive the blood stream of the full force of the passive element in its transit which we have discussed, and incidentally to render more difficult the chemical interchanges of the respiratory function. The removal or diminution of such positive intrathoracic pressure when possible is obviously indicated, and it is usually possible, except in developmental states, by well-recognized means which need not be further considered.

The *endocardial* passive factor in heart disease is mainly valvular. In the period immediately prior to the war a certain school of thought, already referred to, covered with scorn both the undue importance attributed by some to valvular aid in the circulation, and the old and well known conception of what was and is termed "compensation" in the cardiac mechanism, for conditions rendering the circulation more difficult. In itself the term, properly understood, offers no serious objection. To the establishment of compensation the slow onset of difficulty is necessary. The physiologist may destroy valves in the laboratory, and, notwithstanding, for a time register a satisfactory arterial pressure, in such an apparatus as that of Starling already mentioned, but the clinician knows that rupture of a valve in man—a rare event—is frequently very rapidly fatal even in the right heart. The organ has not time afforded it to establish what is quite intelligibly termed compensation, that is, sufficient muscular force behind the suddenly disabled valve to enable the circulation to be efficiently maintained.

I know no more striking proof of the value of the passive valvular factor than is afforded by observation of the circulation in the heart and vessels before the valves have come into being. This is best observed in the transparent embryo of the fish, in which the powerful ventricle void of valve may be seen to be associated at the aortic end with propulsion in the systolic phase and with reflux in the diastolic, and at the sinal end with reflux in the systolic and heart-ward aspiration in the diastolic phase. In the dorsal aorta the blood stream may also be seen to be not steadily progressive but swinging to and fro in a see-saw manner, in obedience to the systole and diastole of the ventricle. In short, in the embryo fish may be seen the best demonstration possible of the Corrigan pulse of well-marked aortic insufficiency. After the formation of the valves and increase of rate in the heart's action the stream becomes purely progressive, and in high rates of heart-beat as continuous as the venous inflow.

In this connexion I may be permitted a few words on methods of examination for the purpose of diagnosis, prognosis, and treatment. While recognizing the general interest, in some cases the utility and in others the necessity for examining a patient by graphic methods mechanical and electrical, and adding radiospection to the employment of our eyes and fingers, it will not surprise you if I express the hope that there may be no abatement in the assiduous cultivation of the old and classical methods. Every method must be used to determine not only the condition of the cardiac muscle, but also which of and to what extent the passive mechanical factors are involved in any given case.

In practice the *degree*, moreover, of the valvular deficiency or obstruction in any case is important. As I have endeavoured to show, the largely passive siphonage from the right to the left heart is effective up to the left ventricle. The featureless left auricle with the undefended pulmonary veins show how much is expected from the powerful mitral valve, and here also the *degree* in which the auricle is defended is important, as also is the ease with which the entrance of the blood into the ventricle is secured.

The depreciation of the importance of the passive valvular factor before the war, under the influence of the school of thought mentioned, was responsible for the passing into the army of a good many men who, from valvular defect, were incapable of standing the strain of war conditions. The lesson drawn from experience in the war was the revision on the part of these optimists of their views, certainly as regards the influence of aortic and mitral stenotic lesions; but they still retain some impenitence as regards mitral reflux. It is their last ditch, and they fight valiantly in it.[15]

But it may be said, cases of both aortic and mitral disease may be adduced which passed through the strenuous experience of war without disability. Such certainly occur, but not frequently, and here again the

degree of defect is as important as the nature of it. How can this be gauged? He would be a bold, not to say an imprudent, man who claimed precision in his estimate of this condition—in the answer, that is, to this question. But it may be affirmed with reason that the determination of the systolic and diastolic blood pressure by the sphygmomanometer is an aid not to be despised. The low diastolic figures of aortic regurgitant disease frequently reveal a considerable degree of this lesion, even when auditory and other signs would lead to a more favourable estimate, and the value of the aortic platform is nowhere better shown than in the normal ventricle behind a large aneurysm of the aorta when the valves are perfect, and the hypertrophied chamber behind valves which leak under these circumstances.

Similarly the height of the systolic blood pressure and the size of the pulse form a useful gauge of the freedom of entry of blood into the left ventricle through a stenosed mitral orifice. With pronounced muscular failure stenosis of the aortic orifice may reach such a degree as to render the radial pulses imperceptible and the diagnosis of any valvular lesion whatever impossible. This was so in a case from which I show a specimen.

On the other hand, obstruction at the mitral orifice may so engorge the right heart as to cause the right ventricle to throw a powerful systolic wave upwards into the superior caval venous system, and downwards into the inferior cava and hepatic sinuses. This may be seen in cases both with and without associated auricular fibrillation. It must be remembered that right ventricular systole occurs during right auricular diastole, and that the auricle may contract for a time more or less efficiently during the subsequent ventricular diastole, even when right ventricular retropulsion through a defective tricuspid valve has for some time been well marked. In one case, the heart from which is shown—that of severe mitral stenosis—there was present at the same time heart-block, probably of the left limb of the auriculo-ventricular bundle, according to electro-cardiography, for I postponed the anatomical investigation of the point until I had shown the specimen here, so as not to damage the aortic orifice.* In another case, the heart from which is also shown—that of aortic valvular disease and stenosis both of the mitral and tricuspid orifices, and all due to rheumatic endocarditis—the powerful right ventricular retropulsion, as exhibited in the phlebogram shown, and which was grossly visible to the naked eye, was associated with a regular pulse, indicating the absence of auricular fibrillation. At a later period, however, after a severe attack of paroxysmal tachycardia lasting for some days, a persistent irregularity of heart's action (auricular fibrillation) became established. This was also the sequence in a case of persistent *foramen primum* with hypertrophied right cardiac chambers, of which I recently published an account.[16]

But paroxysmal tachycardia may be followed by ventricular failure with the development of well-marked mitral reflux and death, but without any auricular fibrillation. In such a case observed by myself, the paroxysmal tachycardia was sudden in onset and as sudden in cessation, and of about twenty-four hours' duration. As, however, is often observed, such tachycardias may recur with some frequency, without entailing either auricular fibrillation or ventricular failure as a consequence. This condition was wont to be regarded as a cardiac neurosis, a term less discredited now than it was prior to the demonstration of the full innervation of the excitatory system of the heart.[17]

In these attacks we have also to remember, as Martius[18] and others have pointed out, that auricular repletion and distension is a late, not early, condition in a valvularly sound heart. The tachycardial ventricle, unequal to sufficient output, accumulates blood which gradually distends and disables the auricle, which may collapse in fine tremor and systolic impotence—conditions synonymous with fibrillation of that chamber.

Similarly, there is no doubt that the ventricle, accelerated by exertion or emotion, or by both these states combined, may likewise distend and disable the auricle, even when the general condition of its musculature is healthy. This is especially prone to occur if there be at the same time some local passive mechanical impediment to easy blood flow through the heart. I show a specimen from such a case which occurred in a youth during a football match, in whom *post-mortem* examination, some years later, showed only a slight degree of mitral stenosis. In this case thoracotomy had been performed, and I show a photograph and some tracings. I have observed the same sequence in another case, in which an active workman who helped to extinguish a fire broke down in auricular fibrillation immediately afterwards. In him also, some years later, I found a definitely stenosed mitral valve, due, so far as could be ascertained, to an almost forgotten chorea in very early life. Why, then, is auricular fibrillation not more frequently observed in cases of cardiac failure with aortic valvular disease? Of the failure in such a case I show an instructive series of tracings, together with a photograph of the heart and an exhibition of the effect upon it of sufficient doses of digitalis. The comparative rarity of auricular fibrillation in aortic valvular failure, as well as the rarity of dropsies in such cases, is, I believe, mainly due to the protection of the pulmonary circulation by the powerful mitral valve and the delaying of that much criticized back pressure or venous stagnation which is favoured by an undefended or obstructed left auricle. It is a matter of experience that few aortic valvular cases die waterlogged. As Dr. George Balfour states, "It is only rarely that dropsy and other secondary diseases of a serious character are established in such cases."[19]

It might, indeed, be argued in a case such as that to which I have referred, in which a degree of heart-block was present in association with auricular fibrillation, that the blockage was advantageous, rather than otherwise, by reducing the ventricular rate independently of the normal relation between the lower and upper chambers of the heart. This case is at once an example of that vivisection by disease to which I have already referred, and of that series of interstitial passive and pathological factors which it is impossible within the limits of our time to discuss to-day. It also showed a positive Wassermann reaction and had a cirrhotic liver, which I exhibit, and died waterlogged, but very slowly. This liver, as well as that from another case with powerful venous retropulsion, which I also show, demonstrates, in the wide and gaping inferior caval entrance and dilated hepatic sinuses entering it, the effects of the powerful venous retropulsion which both exhibited and phlebograms of which I have shown.

Again, when we consider the *duration* of some cases of pronounced auricular fibrillation of the tachycardial type, compatible more or less with corporeal activity and often with little subjective discomfort, we may reasonably attribute this to the presence in such cases of a sound valvular apparatus. I show a radiogram from such a case of eleven years' standing, in which it will be observed that there is very little evidence of dilatation of any of the chambers of the heart.

I submit that the continuance for any length of time of auricular fibrillation, with ventricular action of high rate, in cases of valvular disease of the heart is a very rare event. In auricular fibrillation with tachycardia in these circumstances, either the rate must be reduced more or less promptly or the patient dies. No better evidence of the value of valvular integrity need be sought than this fact, which all who have had much clinical experience will, I feel certain, be in a position to confirm.

While, therefore, from the time of Harvey to the present moment, no one has disputed the pre-eminence of the muscular factor in maintaining the circulation of the blood, the importance, likewise, of valvular integrity and freedom in movement of the heart is undeniable.

The combination of exocardial and endocardial passive mechanical factors finds a place in many cases of heart disease—in some the one class and in others the other preponderating. The management, therefore, of the problems involved is, like the factors themselves, one which combines dealing with both. Thus the thoracotomy or other method used for the removal of exocardial impediment may be necessary to the successful treatment, by appropriate agents, of disorders due to or aggravated by defects of passive endocardial factors. In considering the passive exocardial factors, we found that to influence beneficially the action of the cardiac muscle we had to deal with impediments to its action outside the heart

* Anatomical examination since made showed that the branch of the bundle involved was the right, *not* the left. For confirmation I submitted sections to Professor Arthur Keith, who kindly examined them with me.—A. B.-M.

itself. In treating the endocardial passive factor we can only influence it by action upon the cardiac muscle and the blood content of the heart.

In the *management* of the passive mechanical factor in heart disease, a maintenance of efficient respiration is of the first importance. One of the earliest evidences of imperfect circulation through the heart, it has long been recognized, is some degree of embarrassment of respiration, of what has conventionally been called breathlessness and technically dyspnoea. It may be very slight, transient, and only evoked by circumstances which make an additional call on the heart by exertion, not only of the organ but of the organism. Or it may be more urgent and a consequence of failure of the organ itself to do its particular work, even when the organism as a whole is resting. In any case, the condition has to be dealt with on three lines—namely, by posture; in certain cases by rhythmical manual expiratory pressure and it may be also by manipulatory inspiration, in short, by artificial respiration; and thirdly, by strychnine.

Strychnine is to the distressed pulmonary function as needful as digitalis is to the disordered cardiac muscle. So much so is this the case that it has gained a deservedly high reputation as a cardiac tonic.

The laboratory experimentalist, and even some clinicians, are inclined to believe that strychnine has no effect on the heart. Experience, however, has shown incontestably that the dyspnoea of cardiac failure is relieved by the use of strychnine; and as such dyspnoea is a result of failure of the heart, the latter must be regarded as also eased by strychnine indirectly. This indirect benefit is due to improved respiration and a consequent promotion of better siphonage in the cardio-pulmonary circulation. The powerful action of strychnine on the respiratory centre and upon the spinal cord in raising its reflex irritability is not denied, even by the laboratory therapeutist.

The so-called Nauheim treatment owed, in my opinion, much of the good produced in the cases benefited by it as largely to the effect of the exercises practised on the respiratory function as it did to its effect upon the heart itself, or to the balneological element introduced. So, too, in so-called Oertelism, with its hill-climbing and its restricted imbibition of fluids, the improvement of respiratory capacity with the more free cardio-pulmonary siphonage resulting, played no small part in the general relief experienced in cases suitable for that mode of treatment. That some who were submitted to it died on the hillsides they climbed, was a regrettable detail.

As regards the blood content factor, no one can have removed a large clot from one of the chambers of the heart *post mortem*, and witnessed its immediate shrinkage from elasticity, without being struck with the importance of this mechanical factor in dealing with the engorged heart. This effect, naturally, is most evident in the thinner and more distensible auricle, in which the shrinkage reminds one of the contraction of the uterus after removal of the placenta or of blood clot.

With such cardiac dilatation during life valvular incompetency frequently occurs, although even this has been denied by some. Sir Charles Ballance, in his recent lectures on the surgery of the heart,[20] properly regards any direct cardio-puncture for this state as a "freak operation," and one not to be undertaken lightly, but quotes Dr. Sloan's well known case, in which life was saved by puncture of the heart. In this case the needle of an aspirator was plunged into the heart in the fourth space half an inch to the left of the sternum. It must, therefore, have entered the *left* ventricle, and while ten ounces of "pure blood" were withdrawn, it is probable that direct stimulation of the muscle must have played a part in restoring its activity.[21]

But while such an heroic measure may not be frequently justifiable, venesection, which our ancestors practised too indiscriminately, still has a place in the rational treatment of heart disease.

By the use of a model of the heart-lung type[22] it may be shown that any interruption to the venous inflow at once facilitates cardio-pulmonary siphonage and shrinkage of the dextral chambers of the heart. This limitation of inflow the distressed cardiopath seeks by the assumption of the orthopnoeic position, in which gravity retards dextro-cardiac repletion. Dr. George Balfour, whose memory is still green among Edinburgh men, laid much stress on securing recumbency in aortic valvular reflux, and advised the use even of an anaesthetic to lay the orthopnoeic flat.[23] But, according to the views expressed in this lecture regarding the passive factors in the circulation, the effect of gravity on the inferior caval column and the siphonage of the pulmonic circuit favoured by the posture in orthopnoea, call in question the desirability of changing the upright position for one in which, whatever its effect in diminishing aortic reflux, there is no question as to its favouring dextro-cardiac repletion and increasing pulmonary embarrassment. Were it indeed possible to compress the inferior vena cava without at the same time obstructing the aorta, which unfortunately it is not, such caval compression would have the same effect upon the cardio-pulmonary circulation as a free venesection and without the effusion of blood.

In the presence of cyanosis venesection is certainly indicated, and I have practised it myself with benefit under these circumstances. In aortic valvular cases Hodgkin[24] found bleeding of little service, and the reason for this is evident from the above remarks. To appreciate fully the benefit to be derived from venesection in suitable cases one must, however, consult the experience and practice of our predecessors of a past generation. Thus, we read that in a case of tricuspid and pulmonary obstruction Mr. Kinglake bled the patient during two years upon 312 occasions, to the average amount of 4 oz.—that is, to a heartful—and states that to describe the benefit gained by each bleeding would be to express the difference between the most affecting pain and comparative ease.[25]

Venesection, like cardiolysis, may be a necessary preliminary to the effective use of that agent, indispensable to the cardiologist for action upon the passive endocardial factor—namely, digitalis—concerning which he is prone to wax eloquent.

"Dotted all over our upland pastures," writes Dr. George Balfour, "there is no nobler plant of our indigenous flora than the *Digitalis purpurea*, and there is no more potent benefactor of mankind among the many constituents of our materia medica."[26] There are also few agents concerning the *modus operandi* of which there has been more controversy. To discuss this question in any detail would require a lecture to itself. What, however, every clinician has convinced himself of is that in digitalis he has a trusty means whereby he has on numberless occasions benefited a disordered heart and with which he has at times positively saved life.

If we believe that all cardiac muscle, excitatory and executive, is under the control of the inhibitory, accelerant, and augmentative nervous system, and we succeed by medicinal agents in inhibiting, accelerating, or augmenting cardiac action, it seems reasonable to assume that we do so by the effect of the agents in question upon the nervous system proper for the control or execution of these actions. The only alternative would be to suppose that the use of certain agents renders the cardiac muscle refractory or resistant to their action, or, on the other hand, impulsively obedient to them.

But, leaving speculative disquisition and betaking ourselves to the important field of clinical observation, we can take firm ground on certain facts of experience. If such an attitude be regarded as empirical, so be it. From our empiricism emerges benefit. The most striking results of digitalis are unquestionably observed in the control by it of the paroxysmal tachycardial irregularities of the heart's action found in association with mitral valvular disease, whether obstructive or regurgitant. The heart slows, the tumult is stilled, and quiet reigns. Older writers therefore regarded digitalis as the "opium of the heart," and one of the most recent[27] considers it hypnotic to that organ. But it is not only in tumult with irregularity, but in tumult—that is acceleration—with regular action, that this drug is found to still the storm. The regular failing aortic valvular heart may be succoured, as well as the irregular failing mitral heart, and the failing heart which is neither aortic nor mitral, but has a sound valvular apparatus. These facts are undeniable by clinicians of any experience, and the result is an improvement of the mechanical efficiency of the passive valvular factor when this is defective, and an entire restitution in some cases of its action when the valves are without organic disease.

Cardiac action has always been known to be auriculo-ventricular in sequence, from the upper to the lower chambers, but it is only in our own day that the channel

for this normal sequence has been discovered. We have, moreover, learnt still more recently that this channel, like all muscle throughout the body, is under nerve control. The retardant and accelerant nerves must therefore act through this channel in an important measure. In this connexion one of the cases I have mentioned appears to be instructive—namely, that in which there was at the same time auricular fibrillation and ventricular retardation. The auricular storm continued, but the ventricular action remained slow, though somewhat irregular, because the storm—for we may regard the quiver of fibrillation as storm—in the upper chamber could not spread to the lower on account of anatomical blockage. When digitalis lays the general auriculo-ventricular storm, it lays wholly or in great measure both the auricular and ventricular tumult. Which does it still first and how does it still it? It is conceivable that it may act by interrupting, as in pathological block, the passage of impulses from the auricle to the ventricle, so quieting the latter, and, with a subsidence of tumult in it, allowing the impotent quiver of the former to recover. This view would be favoured by Thomas Lewis, to whom we owe the view that auricular fibrillation is the cause of ventricular irregularity. Or, as Professor Cushny has suggested, digitalis may by some undefined direct action on the ventricle restore its tone, and with this, necessarily, a restoration of efficiency of the auriculo-ventricular valves would follow, and so protect the auricles from distension as to enable them to recover. Between the latter view and older conceptions of the restoration of ventricular elasticity or tone there does not appear to be much difference. In any case the slowed ventricle, with increased contractile power and restored elastic recoil, implies both better closure of the valvular apparatus and improved aspirative action, which promote an easier siphonage in the cardio-pulmonary circuit. What I have said of digitalis applies, of course, to the whole group in which it is *facile princeps*, strophanthus alone approaching it in power and reliability.

Did time permit, other agents, such as atropine, camphor, and ether, etc., might in this connexion be fruitfully considered from the clinician's point of view, but I must desist.

I have thus endeavoured to call attention afresh to the passive mechanical factors in heart disease, which have in recent years, in my opinion, been unduly and unwisely ignored or minimized, but I trust I have done so without claiming for them more than their due weight. I have also pointed out that the removal when possible of passive impediment to the heart's action, and the remedy or modification, also when possible, of defect in the action of the passive mechanism within the organ, as well as placing the patient in a position in which he may derive the greatest benefit from the passive as distinguished from the active forces in the blood flow through the heart, are essential to dealing successfully with ineffective action on the part of that all-important organ.

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ACCORDING to the report of the South Travancore Medical Mission for 1919, the mission hospitals, by inducing larger numbers of well-to-do patients to pay for their treatment, have made further progress towards self-support. During the year 657 major and 6,165 minor operations were performed. The major operations included 37 gastro-enterostomies and 6 operations for amoebic abscess of the liver; the latter was treated by puncture by a large trocar and drainage by a tube subsequently introduced through the cannula. The medical mission, which is administered by the London Missionary Society, also has charge of homes for leprous men, women, and children. All the hospitals are greatly in need of linen and nursing appliances; gifts and subscriptions may be sent to Dr. S. H. Pugh, Neyoor Hospital, South Travancore.

DEFICIENCY DISEASE:

WITH SPECIAL REFERENCE TO GASTRO-INTESTINAL DISORDERS.

A BRITISH MEDICAL ASSOCIATION LECTURE DELIVERED TO THE SOUTH WALES AND MONMOUTHSHIRE BRANCH.

BY

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[*With Special Plate.*]

CUSTOM has sanctioned the application of the term "deficiency disease" to a group of maladies the chief causal factor of which is deficiency in the food of certain substances other than proteins, carbohydrates, fats, and salts. These substances are spoken of as "accessory food factors," or more commonly "vitamines";* they are not foods in the sense of tissue builders or producers of energy; they aid the body to utilize food material sufficiently and its cells to perform their functions. Their true nature is unknown, but probably they are of the nature of organized catalysts or enzymes. They are found in the germs and peripheral layers of such seeds as wheat and rice, and throughout the whole seed in peas, beans, and other pulses. They occur abundantly in the cells of yeast, the yolks of eggs, and in varying proportions in the different parts of plants and in the organs and tissues of the animal body. They are more plentiful in the brain, liver and kidney, than in the muscles. Animals derive them directly from the plants they eat, or indirectly from fresh animal foods. It does not appear that the animal body is capable of manufacturing them itself. Some are soluble in oils and fat, and are contained in the majority of animal fats. Lard is said to be an exception, but though this is no doubt true of stall-fed pigs, I doubt whether it is true of pigs living on raw vegetable foods. These fat-soluble or A-vitamines readily undergo decomposition; they do not exist, or but sparingly, in vegetable oils; consequently artificial substitutes for butter, when made from vegetable oils, do not contain them. They occur in abundance in the green leaves and growing parts of plants, but are deficient in roots and root vegetables. Butter made from the milk of cows fed on green fodder contains a substance which tends to prevent oedema in pigeons fed on autoclaved rice, while that made from the milk of cows fed on dry fodder does not do so to the same extent. There is reason to believe that the absence of these fat-soluble or A-vitamines from the dietary, or of vitamines allied to them, is the actual or predisposing cause of rickets. Other vitamines are soluble in water and are known as B-vitamines. The chief sources of them is grain, fruit, and egg yolk. As they are soluble in water they are liable to be dissolved out of grains and fruit in the process of boiling; as they are concentrated in the germs of seeds they are frequently removed in the milling process. They resist considerable degrees of heat. They are not destroyed by boiling for a short time, but exposure to temperatures up to 130° C. for an hour and a half destroys them. They are commonly referred to as "antineuritic vitamines," since their absence from the food is the actual or predisposing cause of beri-beri.

Vitamines of a third group, the "antiscorbutic" or C-factors, are also soluble in water; they are found in the green parts of plants and vegetables and in fruit. They are unstable, and are very susceptible to the action of heat and alkalis. They are thus readily destroyed in the process of cooking, especially—as often happens—when sodium bicarbonate is added to the water in which vegetables are cooked. Dry grain does not contain them; they develop when the seeds germinate. Tinned or dried vegetables and fruit may contain them, but in reduced quantity and quality, and not in such perfection as the fresh raw products. Experiment shows that among the food materials lemon juice and cabbage juice are richest in them; fresh milk contains them in small amount only.

* The terms "deficiency disease" and "vitamine" are used in this lecture because both are in current use, but neither is satisfactory. Professor H. E. Armstrong, F.R.S., has proposed to replace the term "vitamine" by "advitant," indicating that the substance is necessary to life.

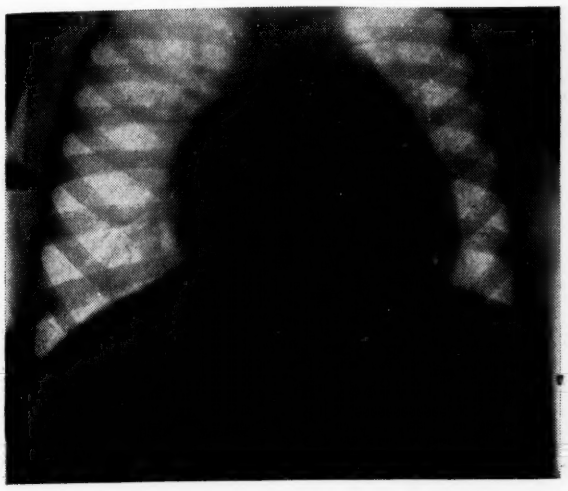

FIG. 1.—Before operation. April, 1919. Skiagraphed by Dr. John Morison. Obtuse right cardio-phrenic angle. Transverse measurement of thorax 2⅝ in.; of heart 1⅜ in.

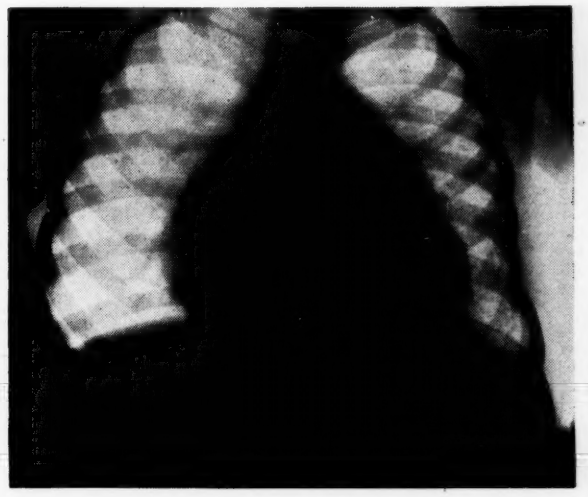

FIG. 2.—After operation. August, 1919. Skiagraphed by Dr. John Morison. Acute right cardio-phrenic angle. Transverse measurement of thorax 2⅜ in.; of heart 1⅝ in. Sixth and seventh left ribs seen deostated. Focus the same in both figures. Blood entering and leaving the heart more easily. Respiration improved. Note narrowing of cavo-aortic zone and increase of auriculo-ventricular diameter.

FIG. 3.—After operation. February, 1920. Skiagraphed by Dr. Martin Berry. Conditions the same as in Fig. 2. Focus longer. Object slightly more magnified.

FIG. 4.—F. P., aged 11. Mitral regurgitation, with symphysis cordis and cardiac hypertrophy. The patient has now gained weight, and the enlargement of the liver has disappeared. In the photograph the liver is still enlarged. Note the total absence of all anasarca, which was marked when the case was operated upon. Note also the cicatrix of the wound over the site of the removed ribs and cartilages.

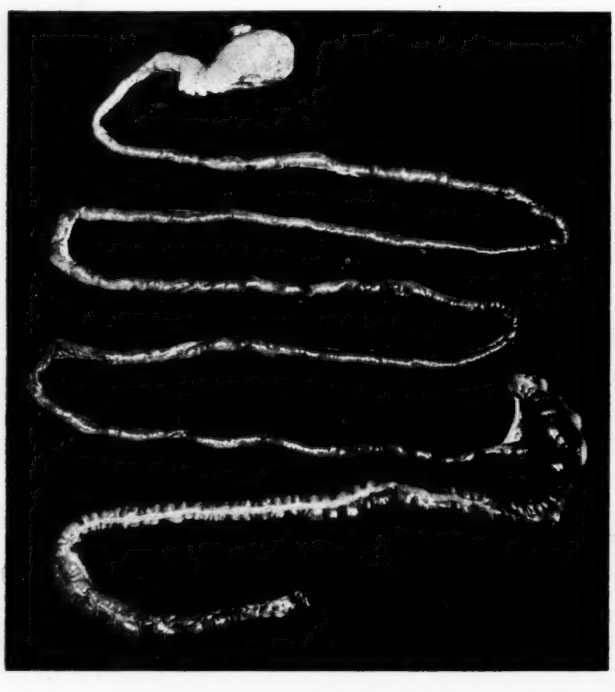

FIG. 1.—Gastro-intestinal tract of healthy adult monkey. Note size of empty stomach, normal appearance of small intestine, and the longitudinal muscular bands and rugae of the colon.

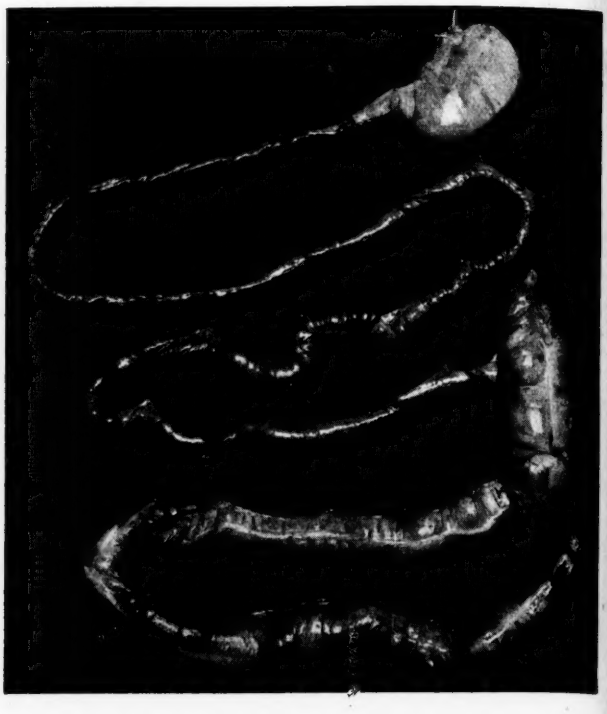

FIG. 2.—Gastro-intestinal tract of adult monkey fed on autoclaved food for ninety-eight days. Note dilatation of empty stomach, large ileal intussusception, great dilatation of colon and atrophy of its longitudinal muscular bands; also inert appearance of the colon.

FIG. 3.—Section of wall of colon from healthy adult monkey, showing longitudinal muscular bands (L.M.B.); also ganglion of Auerbach, indicated by arrow (G).

FIG. 4.—Section of wall of colon from adult monkey fed on devitamized food. Note great atrophy of longitudinal muscular band (L.M.B.) and swelling and degeneration of the ganglia of Auerbach (G). Same magnification as Fig. 3.

FIG. 5.—Section of ganglion of Auerbach from healthy adult monkey. × 265.

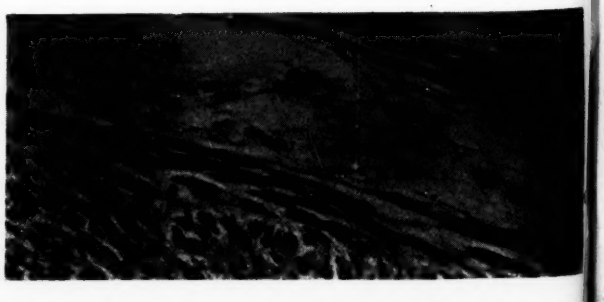

FIG. 6.—Section of ganglion of Auerbach from adult monkey fed on devitamized food. Note swelling and degeneration of its cells. × 265.

It is seen, therefore, that though vitamines are plentifully distributed in the raw materials which both man and animals instinctively use as food, they are very prone to be dangerously reduced in amount in their preparation for consumption. Thus boiled polished rice, which forms the staple food of many Eastern peoples, is often wholly devoid of them; so, too, is white flour, the staple food of so many in England.

A properly constituted food must contain vitamines in small but definite quantity, which varies with the species, the sex, the age and the individual idiosyncrasy of the animal. Without vitamines, the proximate principles of the food—proteins, carbohydrates, and fats—are in a sense dead foods which cannot sustain life. In their absence life may for a short time be sustained by the body utilizing its reserve stores of vitamines and sacrificing its less important tissues; but there is a limit beyond which such stores cannot be drawn upon and once this is reached the cells of higher function begin to lack vigour and depreciate in functional capacity, although the tissues may still hold considerable stores of vitamines. An instructive illustration of this cardinal effect is afforded by the nervous tissues of pigeons suffering from experimentally produced polyneuritis avium. In such cases, where the cerebellar type of the disorder is well marked, where astasia is complete and inco-ordination extreme, when convulsive seizures are occurring every few moments, the birds can be freed within six to twelve hours of all evidences of nervous disorder—with the exception of slight residual effects due to the death of nerve cells—by administering a vitaminic extract made from the yolk of eggs. The atrophic pancreas of animals fed on food deficient in these substances provides also striking evidence of the same depression of cellular function. In microscopic sections its cells are seen to be shrunken and devoid of the granular evidences of an efficient output of work. The important lesson to be learnt from such examples is not so much that the deficiency of vitamines causes the death and disintegration of a number of cells of higher function—for in the case of the nervous system this rarely exceeds 15 per cent. of the whole mass—but that it results in depreciation of function in a much larger number. The bodily engine stops not because a comparatively small proportion of its cellular elements have died, but because the greater mass have ceased to function. It is this conception of the action of vitamines which holds such wide promise in the cure of disease due to or favoured by deficiencies in the food, for with the limited knowledge we already possess, though we cannot restore to life cells already dead, we can restore to normal the depressed functional capacity of the general mass of the body's cells.

The conception that vitamines provide the cells of the body with the capacity—one might almost say the will—to work, has this great merit, that it furnishes a working hypothesis on which to found our treatment. For whatever be the accepted view of the causation of a particular disorder, it must be admitted that to recover from it the body must be provided with substances which excite the cells to effort as well as with those which furnish them with energy and building materials, and with a suitable medium in which to perform their tasks. We should not restrict our vision of deficiency disease to such ailments as beri-beri, rickets, and scurvy—conditions so obvious and so severe that we cannot well overlook them—we should consider every state of ill health from this point of view, so that we may be in a position to rectify nutritive errors and to provide the body cells with the requisite materials to enable them to fulfil their functions efficiently. I am, for example, impressed with the comparative frequency with which beri-beri symptoms may manifest themselves in sufferers from dysentery during the course of treatment in the East, where, as often happens, rice water is used as a food suitable for dysenterics. It is necessary to take care that our invalid foods shall not be deficient foods. The fear of introducing pathogenic agents into the digestive tract by way of the food has led to error, because sterilization of foods to the extent practised nowadays may deprive the cells of the body of those very substances which fit them to resist invasion by the pathogenic agent.

Although, in general, animals of the same species require about the same amount of vitamines, individuals may exhibit wide variations. Amongst the 400 odd pigeons which served in my investigations, about 5 to 10 per cent. survived an exclusive diet of the polished rice for over one hundred days, although the majority succumbed to its effect within forty days. When the supply of vitamines is diminished the time of onset of symptoms (certainly in pigeons) is in almost direct relation with the degree of the diminution. Thus, rice autoclaved in bulk at a temperature of 130° C. for an hour and a half will produce polyneuritis columbarum about twice as quickly as rice autoclaved in bulk at the same temperature for half the time. It is important to note that though when the vitaminic destruction is less complete the onset is longer delayed, the malady in both cases ultimately manifests itself; in practice it is not with complete vitaminic starvation that we have as a rule to deal, but with partial vitaminic starvation. The former means rapid dissolution and death, the latter slow dissolution and disease. Incomplete provision of vitamines for prolonged periods leads eventually to the same end, to the same manifestations of disease as their more complete deprivation for shorter periods.

Again the effects of vitaminic deficiency are modified by the age of the animal. Growing animals are more susceptible than mature; it would seem that they require more vitamines for the acceleration of the chemical reactions requisite for their growth. I have noted this frequently in pigeons which I bred for the purpose. It is almost impossible—as Dr. Mellanby tells us—to produce rickets in puppies more than 4 or 5 months old by the methods he has adopted.

Sex, too, has some influence. When, for example, pigeons are allowed to eat as they will of polished rice, males develop polyneuritis avium more rapidly on the average than females. This may be due to the fact that males eat more, for there is some reason to believe that the demand for vitamines is greater the greater the carbohydrate intake. But apart from this, sex has an influence in other directions which as yet is not understood. Thus, while the pituitary body enlarges in male pigeons and in male monkeys fed exclusively on autoclaved rice, it does not do so in females.

As individuals vary in their susceptibility to given vitaminic defects so also do different organs of the body, and the same organs in different individuals of the same species: in one the pancreas may become markedly atrophic, while in another it appears on naked-eye examination to be little affected. Further, not all organs of the body are affected in like manner by a deficiency of vitamines: the adrenals, the pituitary body, and the brain tend to increase in weight, while all other organs undergo atrophy, except the kidneys, which as a rule are little affected. A factor of great importance influencing the production of symptoms or their time of onset is the composition of the diet with respect to proximate principles. The effects of "vitaminic" deficiency are relatively less marked when the food is well balanced. In the case of monkeys, when the protein intake is adequate and in proper proportion to carbohydrates and fats, the onset of symptoms due to lack of vitamines is much longer delayed and the loss of weight is not excessive. Where, on the other hand, deficiency of vitamines is associated with great excess of carbohydrates, the onset of symptoms is more rapid and the loss of weight is great. The onset of symptoms is more rapid still and the loss of weight greater when to the defects above mentioned is added an excess of fats. In practice it is almost impossible to dissociate the effects of deficiency of B-vitamine from those of carbohydrate excess and deficiency of suitable protein; the two last frequently accompany the first.

Environment, too, plays an important part; lack of fresh air and sunlight hasten that functional depression of cells initiated by the vitaminic deficiency. The fortuitous occurrence of pathogenic agents in the body also plays a part. For example, healthy monkeys, carriers of cysts of *Entamoeba histolytica*, may develop amoebic dysentery when fed on devitamized food, while those fed on a well-balanced dietary, although confined in the same animal room and equally exposed to infection through the medium of flies, will, although they may be carriers of the cysts, escape this disease. Such, at least, is my experience in the case of thirty-six monkeys caught in the Madras jungles. Similarly organisms of the hog cholera group may, in an infected area, infect every pigeon fed exclusively on polished rice, while the majority of controls fed on a well-

proportioned diet escape. Rats also, when fed on food deficient in A-vitamine, will develop xerophthalmia with unfailing regularity, but not, as Miss Bulley has shown, if the conjunctival sacs are cleansed daily and the offending organisms removed. Thus pathogenic saprophytes find in the unhealth and lack of vigour of the cells a suitable soil for growth; or, as I prefer to say, the tissues of the body when properly nourished are highly resistant to the inroads of pathogenic organisms. Exercise, too, appears to hinder the onset of symptoms attributable to vitamine deficiency. Dr. Mellanby, in his experiments on dogs, noted the interesting fact that in animals which ate most bread and took least exercise the rachitic tendency was accentuated. The effect of exercise is probably, as Dr. Mellanby suggests, due to its action in stimulating the processes of metabolism, a suggestion which falls into line with the fact that small additions of thyroid substance to a dietary of polished rice delay the onset of polyneuritis avium.

As, then, the manifestations of deficiency disease are influenced by a number of factors apart from the actual deficiency itself, we may expect to find in human beings wide variations in the incidence, the time of onset, and the character of the symptoms, as well as considerable variations in the organs and tissues affected where the dietetic defect is apparently the same. Thus I recently saw a family of five children amongst whom mucous disease and acidosis occurred in alternate members. The mother had brought them all up from birth in the same way—the same proprietary foods, the same sterilized milk, the same excess of carbohydrates and deficiency of suitable protein, the same deficiency of fresh fruit and vegetables. It is a salutary reflection that while British surgery has in India gained the implicit confidence of her peoples, British medicine has not done so to the same extent, mainly because the Indian mind cannot understand our apparent neglect in treatment of dietetic measures. No such reflection can, however, be cast on our profession at the present time; the danger is rather that in a too restricted or "vitaminic" outlook we may forget the well established truths of dietetics. The study of "vitamines" cannot be wholly successful unless due attention is paid to the general principles of metabolism. When we know how many vitamines there are, and what are the specific functions of each, it may become possible to correct the defect and to relieve with certainty the specific symptoms, as we do now in the case of scurvy.

At present the problem before man is to obtain a satisfying meal. This he frequently does by loading the stomach two or three times a day, it may be with boiled polished rice, vegetable oils and spices, or with white bread, margarine, and jam; or in the case of infants, with almost vitamine-less proprietary foods, sterilized and diluted milk. Such meals are dangerously unbalanced and dangerously deficient in vitamines and in suitable protein and excessively rich in carbohydrates.

The clinical and pathological effects observed in monkeys whose food presents these defects are the combined result of four factors: (1) deficiency of vitamines, (2) deficiency of suitable protein, (3) excess of carbohydrate—combined in some cases, to which I shall make special reference, with excess of fats, and (4) pathogenic organisms, the presence of which in the animal body may be regarded as fortuitous.

The clinical effects as seen in monkeys are these: failure of appetite, loathing of food, loss of weight, progressive anaemia and asthenia, failing health of the skin, staring hair, loss of hair, eruptions and eczematous patches, low temperature, slow respiration, headache, vomiting occasionally, diarrhoea, dysentery, impaired sensation, great muscular weakness, inco-ordination, and paresis. Death occurs within a hundred days in the monkey (*Macacus sinicus*). It is greatly hastened when deficiency of vitamines and excess of carbohydrates is associated with an excess of fats in the food. In these circumstances the loss of weight is more rapid; the stools may have a sprue-like character, fatty acids are present in them in great excess; atrophy of the pancreas, of the thyroid, the heart, the lungs, the spleen, and the submaxillary glands is marked, while, on the other hand, the weight of the brain is one-seventh part greater than in healthy control monkeys. All these symptoms may not occur, or may not be equally severe in every animal, but they are the common clinical manifestations of the dietetic error in monkeys, and may be supposed to be the common clinical manifestations of the same dietetic errors in man.

However remarkable the production of these disorders in monkeys may appear to be, it is even more remarkable to note the rapidity with which they disappear when the deficient and ill-balanced dietary is replaced by one more perfectly proportioned and containing an adequate supply of vitamines. Colitis can be produced by a deficient diet with great regularity in monkeys, and can be cured by the provision of suitable food; so also can the anaemia and the dyspeptic disturbances. We know in a general way that in man digestive disturbances will cause anaemia, or that blood-destroying agents will do so; we know that dysenteric organisms may cause colitis; but, apart from the little that we know of these matters, I ask, What is the cause of the colitis which is so common and is not due to dysenteric organisms, or what is the cause of the dyspepsia that is so common and is not due to gross lesions of the stomach, or what is the cause of anaemia not due to blood-destroying organisms? I submit that a common cause of all of them is food deficient in vitamines and ill balanced with respect to proximate principles, and that by giving suitable simple vitamine-containing foods we can cure or greatly relieve them.

Diets thus defective lead not only to great muscular wasting, loss of fat and loss of weight, but to certain changes in the viscera. These are marked loss of weight of the thymus, the heart, the submaxillary glands, the pancreas, the spleen, the liver, the lungs, the thyroid, the testicles, and the digestive tube. The kidneys are often little affected. The atrophy affects most markedly those organs which are least essential to the life of the individual. To these must be added thinning of bone and diminution in numbers of the red cells of the blood. Increase in the weight and in the adrenalin-content of the adrenal glands also occurs (except when fresh butter is added to the deficient dietary, when the adrenalin-content is not increased), as does increase in weight of the brain (especially when the diet contains excess of fats), and of the pituitary body, especially in males. The most important changes observed *post mortem* are seen in the abdominal viscera. They comprise (see special plate) great loss of omental fat, enlargement of the mesenteric glands, especially those of the colon, dilatation of the stomach, thinning and ballooning of the walls of the small and large intestine, the frequent occurrence of intussusception, atrophy of the longitudinal muscular bands of the colon and loss in places of its characteristic rugae, congestion of the bowels, and subperitoneal ecchymoses (often intense), congestion of the mucous coat of the stomach and duodenum, and of the small intestine less often, and the almost invariable presence of colitis of more or less wide distribution. All these changes are not equally well marked, nor are all of them present in every case. It often happens that one part of the tract is more affected than another. Dilatation of the stomach, with great ballooning and thinning of the walls of the small intestine, "air-lock" and colitis are, for example, more marked if the diet is also excessively rich in carbohydrates. The pancreas, although almost invariably atrophied to some extent, may be markedly so in some, slightly in others, the atrophy being most marked when the deficiency of vitamines and protein is associated with an excess of carbohydrates and fats.

The histo-pathological changes in the digestive organs, some of which are shown by the microphotographs printed in the special plate, comprise (*a*) atrophic changes in the submaxillary glands, in the pancreas, and in all coats of the stomach, the small and great bowel; (*b*) congestive and inflammatory changes in the mucous and submucous coats of the stomach, duodenum, lower ileum, and colon; (*c*) degenerative changes in the gastric and pyloric glands, in the glands of Brunner, the glands of Lieberkühn, and the mucous glands of the colon; (*d*) atrophy and necrosis of the villi; (*e*) atrophy of the muscular coats of the bowel; (*f*) degenerative changes in the plexus of Auerbach; (*g*) colitis; (*h*) great loss of lymphoid elements throughout the tract; (*i*) invasion of the bowel walls by bacterial organisms which in some cases I have been able to trace through the thickness of the walls to the subperitoneal coat, and in fortunate sections actually into subperitoneal vessels; (*j*) infection of the mesenteric glands by bacteria, which can be cultivated from the enlarged and discoloured organs. Pathological changes of such severity as these may not often be encountered in

man; they are the end results of the deficient dietaries and of the nutritive errors we are dealing with, the goal towards which this form of malnutrition tends. But that they often exist in lesser degree in human beings who persistently use such dietaries there can be no reasonable doubt. Nor can it be doubted that they cause in the human subject grave depreciation of function of the digestive and absorptive organs and grave depreciation of their resources against infecting agents present as pathogenic saprophytes in the tract. The normal production of the gastro-intestinal, biliary, and pancreatic secretions is impeded, the cells available for protective duties are reduced in numbers and in energy, absorption of food materials is less perfect, and the absorption of toxic products more easy; the neuro-muscular control of bowel movements is likewise impaired. In this way the resources of the gastro-intestinal tract against infecting agents are reduced. The histo-pathological changes occurring in the stomach are such as would tend to lowered resistance, to hypoacidity, or even to achylia, and to gastric ulcer, which occurred in three out of ten monkeys fed on dietaries deficient in vitamines. It has recently been shown by Ivy that in dogs, if these conditions exist, chronic ulceration of the stomach may be produced by feeding them with streptococci. The origin of such ulceration thus falls into line with that of xerophthalmia, which, as we have seen, is induced by two factors—the lowered resistance of the tissues and the presence of the specific pathogenic agent. The condition does not arise without the presence of both, nor would it appear from Ivy's experiments that chronic ulcer of the stomach will arise in dogs without the presence of these two factors and the added one of hypoacidity.

Digestive disturbances and dilatation of the stomach are so constantly present in monkeys fed on these deficient dietaries that they may be regarded as cardinal signs of such deficiency. It is clear that no amount of gastric lavage could restore the stomach to normal function in the absence of an adequate supply of vitamines, while gastro-enterostomy would be likely to yield disappointing results. The provision of these substances in the food will restore this organ to normal activity in the human subject where the derangement is definitely due to the absence of vitamines. The following is a case in point which recently came under my care:

A man, aged 60, had for twenty years been a confirmed invalid. He was a martyr to dyspepsia and had a greatly dilated stomach, which he washed out three or more times a week—to his great exhaustion. He had not had a natural motion of the bowels for many years, but used a glycerin enema daily. He was very anaemic and of a colour which one associates with cancer of the pylorus. On examination I found a dilated stomach, a tender duodenum, "air-lock" in the small intestine, and a tender caecal region, but no evidences of cancer. For many years he had been subsisting on a diet excessively rich in carbohydrates, deficient in suitable proteins and in vitamines. He never ate fresh fruit and but rarely vegetables, and then overcooked. He complained of neuritic pains in the lower limbs and felt that he was losing the use of them. As his diet was very similar to that of my monkeys I resolved to treat him in the light of the results I had noted in those animals. He was put to bed, given a small quantity by the mouth of raw milk every two hours, and a solution of vitamines at night. Gradually the food was adjusted so as to contain an adequate supply of vitamines and of proximate principles in due proportion; it was made up mainly of eggs, cheese, fish, fresh fruit, wholemeal bread, and green vegetables. He was deprived of his stomach tube and glycerin enema syringe and given paraffin only. The vitaminic extract in solution was continued. He made rapid strides towards recovery; in two and a half months he gained 10 lb. in weight, was freed of all symptoms of dyspepsia, and the bowels—aided by the paraffin—acted normally.

I relate this case for two reasons: first, to emphasize the importance of a study of the "dietetic history" in every case of gastro-intestinal disorder, and secondly, to mention a lesson which this case taught me. It was this: When the patient had been taking the "vitaminic extract" for ten days or so he drew the attention of his medical attendant to the fact that his stools, which previously had been of a dirty white colour, offensive, and loaded with fatty acids, were now dark and well formed. So they remained until the supply of vitaminic extract with which he was provided from my laboratory ran out; then the stools again began to lose their dark colour and to return to a white offensive state. This observation can have but one explanation, namely, that the vitaminic extract promoted the flow of bile and of pancreatic juice. The experimental confirmation of this clinical observation and of my own histopathological studies in monkeys is provided by the work of Wegelin and Meyer, who have recently shown that intravenous injections of a vitaminic extract of brewer's yeast has the same effect in increasing the flow of biliary and pancreatic secretions as has secretin. The case is of importance also because it illustrates the need for the provision of vitamines in a readily absorbable form, for in this case the flow of the biliary and pancreatic juices was not sufficiently excited by the vitamines in the food, due no doubt to the fact that the processes of repair and regeneration of the digestive organs take place slowly. Pancreatic deficiency is, in my own experience, a comparatively common disorder. It may be recognized clinically with sufficient accuracy by the observation of the "oatmeal" fatty stools.

The very frequent occurrence of intussusception in monkeys fed on deficient food is of great interest. The majority of these intussusceptions were produced in the death agony, but a proportion presented appearances suggestive of an earlier onset. I have hesitated to attach much importance to their occurrence since intussusceptions are often met with in laboratory animals at necropsy; but the greatly increased incidence of intussusception amongst children in Germany during the very lean years of the late war has recently been commented on in the writings of German physicians. Without going too far, we may safely say that children who are properly fed will be less liable to suffer from intussusception. No doubt there is nothing new in such a statement, but I do not think we have realized hitherto that the neuro-muscular control of the bowel is dependent in great measure on the adequate provision of vitamines in the food.

Of other gastro intestinal disorders probably connected in their origin or in their continuance with dietetic deficiency and lack of balance of the food there are four which call for special reference. These are mucous disease of children, coeliac disease, intestinal toxaemia, and gastro-intestinal stasis. The first—mucous disease—is very common in India amongst European children. It is probably equally common in England. Its true nature is often not recognized unless the stools are examined as a routine measure. The pathological process underlying it is chronic gastro-intestinal catarrh, which is readily produced by a diet deficient in vitamines and suitable protein while excessively rich in carbohydrates. It is easily recognized clinically by the mucous stools, the attacks of diarrhoea, the peevishness, the night terrors, the pasty skin, the digestive disturbances, and above all by the dietetic history of the case. The child's food is made up of sterilized milk, proprietary foods, white bread, polished rice, poor butter, overcooked vegetable or fruit, and excessive quantities of starch and sugar, or of other aliments having the two main defects of carbohydrate excess and deficiency of vitamines. The malady is very amenable to treatment by the limitation of the carbohydrates, the provision of a more liberal supply of suitable protein in the form of a lightly boiled, poached, or raw egg, and of foods containing vitamines combined with the administration of a solvent of mucus and an evacuant such as grey powder. The histological results clearly indicate that the entry into the blood stream through the debilitated intestinal mucosa, not only of toxins but bacterial agents, is likely frequently to occur, so that deficient and ill balanced diets of the kind fed to my monkeys may be regarded as common causes of intestinal toxaemia in its widest sense. With regard to the chronic intestinal stasis I shall say only that if failure of the neuro-muscular control of the bowel is a factor in its causation or maintenance, deficiency of vitamines is the most ready means by which such failure may be produced.

As my own experience has not brought me into contact with "coeliac disease," I speak of it with reserve. It presents, however, many features suggestive of vitaminic deficiency, and the surmise arises that its origin may be connected with such deficiency, or that a number of its characteristics may be secondary to the imperfect assimilation of vitamines. These characteristics are: Its absence in breast-fed children; its onset between the age of nine months and two years; the cessation of growth; the diarrhoea which so frequently precedes it; the ill-formed, pale "oatmeal" fatty stools; the frequent association of scorbutic

symptoms; the abdominal distension; the diminished size of the liver; the occurrence of oedema; the thin bones; the muscular feebleness, and its afebrile nature. All have their counterpart in animals subjected to vitaminic deficiency under experimental conditions. It may be, therefore, that a study of the malady from the vitaminic point of view might throw further light on its causation and treatment.

In this lecture I have dealt only with deficient intake of vitamines as the cause of "deficiency disease." But it is possible that deficient assimilation of these substances—consequent on derangements of the digestive organs from whatever cause arising—may give rise to symptoms of deficiency disease. It has seemed to me that solutions of vitamines have improved cases of enfeebled digestion and of biliary and pancreatic insufficiency more certainly than have the natural foods from which the solutions of vitamines were prepared.

There is much that I have been compelled to omit in so brief a consideration of the subject as this: amenorrhoea, sterility, inability of women to suckle their children, the effects on breast-fed infants of human milk deficient in vitamines, dental caries, rickets, beri-beri, oedemas, and the special effects of vitaminic deficiency on the endocrine organs. All these and much more are deserving of the closest study in connexion with the great question of diet as a factor in the causation of disease and racial degeneration. There is, indeed, no more important problem before the country at the present moment than the proper provision to the people of a properly constituted food, and no more urgent necessity than their instruction in these matters. I hope, however, that I have said enough to excite interest in the wider aspects of "deficiency disease," for I am convinced that with our increasing mastery of these dietetic problems our mastery over disease will increase also.

POISONING BY ARSENIURETTED HYDROGEN.

BY

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TEXTBOOKS dealing with industrial processes in which metals in gaseous combination are involved generally do not give definite facts as to minimum quantities capable of causing rapid death by toxaemia. Of course such data cannot be concise because of individual idiosyncrasy and the varying strength of gas acting lethally. My experience, therefore, in dealing with a particular example of this class—namely, poisoning by arseniuretted hydrogen, AsH_3—may therefore be of interest.

This gas, which possesses by weight a considerable proportion of arsenic and is of an acid type (not actually corrosive but resembling H_2S), is chiefly met with by workers on processes in which nascent hydrogen is liberated, or in which hydrogen is used as a gas—by lead burners or for the inflation of balloons or airships. Where hydrogen is derived from the interaction of a metal and an acid or alkali, either one or both may contain large amounts of arsenic, and under these conditions the hydrogen is very liable to be contaminated by AsH_3. In the process of reducing certain benzene derivatives from one stage to another, zinc dust (or iron filings) is mixed with weak hydrochloric acid and ice in the presence of the body to be reduced; in another method zinc dust is heated with a caustic solution in tubs, vats, or pans. These materials frequently contain arsenic as an impurity, and this combining with the hydrogen produced is inhaled by the workmen. The same gas may also occur in drains or wells where chemical fluids can accumulate.

Dr. Alice Hamilton, of the Labour Bureau, New York, in her recent monograph, *Hygienic Control of the Aniline Dye Industry in Europe*, published as a result of a tour over many British and Continental chemical works, quotes the statement in Rambousek's well-known work on industrial poisoning, that the hundredth part of a milligram of As taken in the form of arseniuretted hydrogen is rapidly fatal to human beings. My experience, which has extended over two years, shows, on the contrary, that much more than this amount can be taken and although the result is serious, it is not necessarily fatal.

I have only met with one case in which death might actually be due to this cause.

This man was seen by me only a few days preceding death. There were obviously present some of the leading symptoms, such as icterus and a low typhoid type of delirium, but the urine was not available for analytical purposes.

Post mortem the macroscopic appearance of main organs had no distinctive features, but as the man had worked on a reducing process it was inferred that death was due to toxaemia. Specimens of viscera for analysis were obtained but not reported upon.

In subsequent cases which I saw from the onset, there were symptoms which at once directed attention to the causative agent. Where a haematuria of porter-like appearance occurred, a quantitative test of the urine for arsenic was immediately made; all the men working on or near the process were examined carefully and their urine was submitted to investigation. By this means a few men were found to be excreting arsenic in the urine while not appearing ill and continuing at work in the ordinary way. The possibility of these men having ingested the arsenic in food or on unclean hands was considered, but proved untenable.

Arseniuretted hydrogen when inhaled in toxic amounts rapidly produces haemolysis, with destruction of the red corpuscles and conversion of haemoglobin into methaemoglobin and oxyhaemoglobin; there is a destructive effect on renal tubules and epithelium, and haematuria results. The daily output of urine is not necessarily reduced, and such cases do not always during the first few days feel ill enough to stop work; thus they may present themselves already having an icteric appearance, complaining of languor and anorexia and having a rapid feeble pulse of tension below 100 mm. Hg. Such cases sent at once to hospital and notified as suffering from this gas toxaemia have invariably recovered, and the urine in the course of three to four weeks has ceased to contain more than what may be considered normal amounts of arsenic.

Not any of the workers on this process has to my knowledge developed nerve lesions, such as peripheral neuritis, known to follow the taking of excessive amounts of arsenic by the mouth, nor has any splenic abnormality, icterus, nor biliary obstruction of any type remained as a subsequent feature.

From the amount of arsenic excreted by the urine over the period of detention in hospital—say, three to four weeks—it is easy to conclude that a far greater amount of this gas may be taken by inhalation without causing death than has hitherto been believed possible. Naturally the factors of concentration or dilution of gas, in any given case, are unknown; in men examined every twenty-one days the period of absorption is limited to less than three weeks.

Case 1, working on reduction process, was seen at home on November 14th, 1918. He had been ill a few days, had marked icterus and was feeble; there was no delirium. The urine was of a dark porter colour, containing methaemoglobin, epithelial cells and tube casts, as well as 796 millimilligrams of As_2O_3 per 100 c.cm. On December 12th the urine contained epithelial cells, much oxalate of lime, traces of albumin and indican, no tube casts and less than 10 mmg. of As_2O_3 per 100 c.cm. This patient made an uninterrupted slow recovery and has not been ill since; there has been no nerve lesion.

Case 2 was seen on November 9th, 1918. He complained of malaise, and passed porter-coloured urine containing 35 mmg. As_2O_3 per 100 c.cm. No icterus was at any time evident; he stayed at home, and on December 20th his urine contained less than 10 mmg. As_2O_3 per 100 c.cm.

Case 3, who complained of haematuria, was seen on December 5th, 1918. When admitted to hospital his urine was black, specific gravity 1025, acid, and albuminous; it contained 200 mmg. As_2O_3 per 100 c.cm. His recovery was uninterrupted; on January 30th, 1919, his urine contained less than 10 mmg. of As_2O_3 per 100 c.cm. He has since been quite well.

Case 4, who complained of abdominal pain and vomiting, and whose skin, conjunctivae, and palate were faintly icteric, was seen on January 24th, 1919, and sent to hospital. His urine was of a deep-red burgundy colour, clear, specific gravity 1025, and acid. It contained much albumin. Methaemoglobin and oxyhaemoglobin were present, as well as 185 mmg. As_2O_3 per 100 c.cm. On February 26th his urine contained less than 10 mmg. As_2O_3 per 100 c.cm., and he made a perfect recovery.

Case 5, who had no pain and no icterus, was detected while discharging his duties in the usual routine of the reduction process. On February 13th, 1919, his urine was dark-brown in colour, acid, specific gravity 1009, and contained a good deal of albumin, a few vesical epithelial cells coloured brown, no tube casts, some fibrinous clots, some brownish granular masses, and 70 mmg. As_2O_3 per 100 c.cm. By February 27th, 1919, the arsenic

had been reduced to less than 10 mmg. per 100 c.cm., and he made an uninterrupted recovery.

I am indebted to Professor Delépine, of the Public Health Laboratory, Manchester, for the analytical reports submitted, and to Mr. Thomas Callan, M.Sc., Ph.D., for help in subsequent analyses.

RUPTURED MALARIAL SPLEEN: SPLENECTOMY: RECOVERY.

BY

CYRIL A. RAISON, M.B., CH.B.,

LATE ACTING MAJOR R.A.M.C. (T.),

OFFICER IN CHARGE SURGICAL DIVISION 33RD STATIONARY HOSPITAL.

BATTLE wrote: "The rupture of a malarial spleen may be compared with that of an aneurysm—the rupture of a normal spleen to that of a large artery," while Lieut.-Colonel Crawford, in the *Indian Medical Gazette*, summarizes his extensive experience in a statement that "Ruptured spleens not infrequently come under the notice of surgeons in India—not as a rule in hospital during life, but after death in the subject of a judicial *post-mortem* examination. The injury is always of grave importance and practically always fatal." The late Surgeon-General Coull-Mackenzie stated that 68.9 per cent. of cases of splenic rupture end fatally within half an hour. Captain Jamison published an interesting series of six cases in the BRITISH MEDICAL JOURNAL, September 14th, 1918, but in view of the fact that relatively few recoveries have been recorded, the following case may be of interest:

A Macedonian, 56 years old, was admitted on May 30th, 1918. He was very collapsed and complained of great abdominal pain, aggravated by movement or by coughing; his expression was extremely anxious and few words could be elicited from him. His skin was sallow, his lips were pale and slightly cyanotic. The pulse was 145, and the respirations were 44 per minute; they were shallow, and there were signs of diffuse bronchitis. The abdominal wall scarcely moved and was rigid and tender generally, but particularly in the left hypochondrium. The left part of the upper abdomen was distinctly prominent; the knees were flexed. The splenic dullness extended to the umbilicus, and both flanks were dull on percussion. There was no external sign of bruising.

Operation.—Under local anaesthesia by ½ per cent. novocain a median incision was made above the umbilicus. When the peritoneum was opened a large quantity of blood gushed forth. Morphine gr. ⅔ was given, and Captain A. C. Smith induced gas and oxygen anaesthesia. An oblique incision was made through the left rectus parallel to and one inch below the costal margin. The spleen was seen to be greatly enlarged, the anterior surface of its capsule was almost completely raised from the matrix, and showed an irregular tear about four inches long, through which blood was coming. In consequence of adhesions to the diaphragm it was impossible to bring the spleen up, and therefore (with considerable difficulty) the pedicle was clamped from the front. Intravenous injection of glucose and sodium bicarbonate was made throughout the remainder of the operation. The adhesions giving considerable trouble, they were divided between clamps and ligatured after the removal of the spleen. The abdominal cavity, which contained much blood, was irrigated with warm saline solution, and a certain amount being allowed to remain inside, the abdomen was closed.

The patient's condition was critical, but on the following day he was much improved, the pulse falling to 128 about twelve hours after the operation. He was given 10 grains of quinine four-hourly, and made steady progress, the evening pyrexia, which disappeared on the tenth day, being the only point of note. When last seen, in February, 1919, he said he had never felt better in his life; he certainly looked many years younger.

The spleen was found to be 13½ inches long, and 6½ inches wide, and to weigh 3 lb. 2 oz. In the upper end there was an irregular tear about four inches long, penetrating two inches into the substance; the capsule was raised in front. The blood, limited above by the diaphragmatic adhesions, had burrowed beneath the capsule, which had eventually given way, a tear being produced. The blood count made on June 6th (a week after operation) showed 3,520,000 erythrocytes, and 26,000 leucocytes (polynuclears 67 per cent., eosinophils 4 per cent., small lymphocytes 11 per cent., large lymphocytes 9 per cent., large hyalines 9 per cent.); many red cells showed polychromatophilia.

Three days subsequent to the operation the following history was obtained from the patient's wife, but doubt is cast on its accuracy: "He had had malaria for many years. Four or five days before his operation he had been kicked in the back by a donkey, but felt little the worse and continued his ordinary work. During the early hours of the morning prior to his admission he suddenly awoke with great pain in his left side and then in his abdomen. He vomited several times."

The interesting features of this case are that the rupture occurred in a man of 56, that the spleen was the largest I can trace as having been removed in a case which subsequently recovered, and that there were massive adhesions. According to Vanverts the presence of the latter in splenectomies for malarial hypertrophy without rupture raises the mortality from 5.7 per cent. to 72 per cent.

SYPHILIS INSONTIUM.

BY

J. C. McWALTER, M.D., LL.D., M.R.I.A.,

SOMETIME SPECIALIST SANITARY OFFICER R.A.M.C.

D'ARCY POWER teaches that syphilis is transmitted to the fetus only at conception or in the earlier months of pregnancy. Almost all the experts seem to hold the same view, and hence it may be worth while to record a case, at present under my care, which appears to prove conclusively that infection can take place in the eighth month of pregnancy.

It is also of great importance to have definite and scientific records of cases of syphilis insontium, because there is usually something short of conclusive proof that a case of syphilis was extragenital in origin.

My patient was a married woman in the earlier thirties with four healthy children and no history of abortion. She consulted me about an ulcer at the angle of the mouth; it was shallow and of greyish colour; at first I supposed it to be due to pyorrhoea. She expected her confinement in the following month. I prescribed some solution of iodine with glycerin, but when she returned the following week the ulcer was no better, the submaxillary glands had become inflamed, and the whole sore began to exhibit a typically chancroid appearance. I sent her to the Pathological Laboratory at Trinity College, Dublin, and it was reported that the sore was teeming with *Spirochaeta pallida*.

One is peculiarly prone to jump to rash conclusions in these cases, and I presumed that the woman's husband was responsible. I interviewed and examined him, but he had no trace of the disease. It then seemed probable that the woman herself was to blame, when further investigation showed that she had got the sore on her mouth from kissing a child who had an acutely virulent sore on its mouth.

On consultation, it was decided that salvarsan treatment might be risky, in view of the expected early confinement, and the patient was put on an ordinary course of mercury, cinchona, and iodides. The sore rapidly healed, and in four weeks she was delivered of a fine infant, which exhibited no signs of syphilis at birth, or for four weeks afterwards. The child had never a primary sore.

I had begun to conclude that the infant had escaped syphilis when the mother reported that it had commenced to look unwell, and when examined in the fifth week it showed slight but unmistakable signs of congenital syphilis. These cleared up so rapidly under mercurial treatment that it is with great difficulty the mother can be induced to continue the treatment for her child.

Does the *Spirochaeta pallida* pass directly from the maternal blood to the infant's? The patient would seem to prove the affirmative. This case proves, I think—

1. Infection of a mother with syphilis in the eighth month of her pregnancy results in infection of the child.
2. The syphilis in the child is of a milder form and develops later than ordinary congenital syphilis.
3. Infection of the mother with syphilis in the later months of pregnancy may have no deleterious effect on her confinement.
4. There are some cases of syphilis insontium capable of the most rigid proof.

PROFESSOR P. LEBEAU, of the School of Pharmacy of the University of Paris, will give two advanced lectures in chemistry at the end of this month at King's College, London. The first lecture, on June 28th, at 5 p.m., will deal with the ammonium metals in organic chemistry; in the second, on June 30th, the theoretical and practical results of the work of M. Moissan will be discussed.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

A CASE OF MALIGNANT PUSTULE IN WHICH THE INCUBATION PERIOD WAS KNOWN.

THE main points of interest in this case are that the patient, having contracted anthrax from a shaving brush, knew: (*a*) When he cut himself; (*b*) when the painful papule appeared at the site of the cut; (*c*) when the papule became a vesicle. It is also noteworthy that on admission to hospital, seven days after the onset of the disease, the patient had received no specific treatment and yet appeared to be well on the road to recovery.

A study of the literature shows that most cases of cutaneous anthrax have started as a papule; one, however, recorded by J. and C. Regan in the *American Journal of the Medical Sciences*, vol. 157, 1919, started from a cut, and here, as in the following case, thirty hours elapsed before the appearance of the papule.

A schoolmaster, aged 36, was admitted to St. Bartholomew's Hospital on January 25th, 1920, complaining of a pustule on the left side of his face which he believed to be anthrax.

History.—On January 4th he used for the first time a shaving brush which had been presented to him eighteen months before. On January 17th, at noon, he was shaving, and cut himself for the first time since using the new brush. On January 18th, at 6 p.m., the patient noticed a painful "pimple" at the site of the cut on the left side of his face; and on the morning of January 19th the "pimple" had become a "blister"; this history was confirmed by independent questioning of the patient's wife. The subsequent history was that the "blister" discharged, and that the left side of the neck became very "stiff" and swollen on the 21st. Next day he began to get better; the swelling began to go down, although glands swelled on the right side of his neck. A friend who worked amongst hides told him that he thought the condition was anthrax. On the 23rd—this being the first treatment—he applied fomentations; a thin yellow discharge exuded from the pustule. On the 24th he consulted a doctor, who advised him to go to hospital.

Condition on Admission, January 25th, 1920.

The patient did not look or feel very ill; there was a typical malignant pustule over the lower border of the left lower jaw about one-third of the way between the angle of the jaw and the symphysis menti. The cervical glands were enlarged. His temperature was 99.2°, his pulse was 104, and respirations were 24. There was no oedema of the face or neck and nothing abnormal was found elsewhere.

Treatment and Subsequent History.

On the day of admission the pustule with about one inch of skin round it was excised and the wound dressed with tincture of iodine; 50 c.cm. of Mulford anti-anthrax serum was injected into the left median basilic vein. The patient slept well, and did not complain of any pain. On the following day 30 c.cm. of Sclavo's serum was injected hypodermically. The patient continued to improve, and on January 30th was discharged, having a granulating wound and a few enlarged glands in both sides of the neck. On May 1st, 1920, the wound was completely healed and the cervical glands were no longer enlarged.

Pathological Reports by Dr. Mervyn Gordon.

"The pustule shows chiefly staphylococci, but on searching the film preparation made from the swab a few Gram-positive bacilli were found, some of which closely resembled anthrax in shape."

"A culture from the scab gave a majority of *Staphylococcus aureus* and two colonies of anthrax bacillus."

"An examination of the shaving brush was made, and a Gram-positive spore-bearing bacillus indistinguishable from *B. anthracis* was cultured from it. A guinea-pig, however, which was inoculated with a broth emulsion of the hairs of the shaving brush, was apparently unaffected."

It would seem, therefore, that if the micro-organism present in the shaving brush was anthrax, its virulence was attenuated.

For permission to publish this case I am obliged to Sir D'Arcy Power, into whose wards it was admitted.

London, E.C. H. J. MCCURRICH, M.R.C.S. L.R.C.P.

SUBCUTANEOUS INJECTIONS OF CAMPHOR.

UNDER Letters, Notes, etc., for March 13th, p. 388, the reply is given to a correspondent that heroic doses up to 30 grains of camphor have been given but are dangerous. It may be of interest to record that, in a certain large stationary hospital in France during the severe influenza epidemics, I gave, almost as a routine, intramuscular injections into the gluteal region of camphor in oil, gr. v in ℥ xv, every four hours without untoward results in a single instance. In selected cases—for example, in cases of influenzal pneumonia where the physical signs varied from day to day—I am convinced that the intramuscular injection of camphor in oil gr. v proved of the greatest value, and, in many cases where the toxaemia was not too intense and the heart required that little bit more of stimulation to pull the patient through the crisis, this method of treatment was the means of saving life.

In cases with definite signs of impending heart failure I have given gr. x in one injection, with marked beneficial results on the pulse both in tension and rate. Fifteen minutes to half an hour usually elapsed before the heart responded to the camphor, and the effects lasted from three and a half to four hours after injection. There is no other cardiac stimulant to my knowledge which can produce such marked and prolonged stimulation from one dose.

It is important to plunge the needle up to the hilt and inject very slowly, withdrawing very gradually at the same time, which usually avoids pain from pressure. The pain may be severe at the site of injection if this is given too quickly. Parke, Davis, and Co., and one or two other manufacturing chemists, have always had ampoules containing 1½ and 3 grains of camphor in sterile olive oil. It is easy to make one's own preparation by dissolving the camphor in ether before mixing with the sterile oil. Should the camphor not be dissolved first of all, it precipitates out when the oil cools.

Boulogne. A. D. GORMAN, Capt. R.A.M.C.(S.R.).

SEVERE ANGIO-NEUROTIC OEDEMA.

A BOY, aged 3 years and 10 months, complained, on April 25th, of pain in the left leg, which the mother noticed had become swollen.

When I saw him on the following day the limb was oedematous and painful from the toes to the lower third of the thigh. The boy was fretful and the temperature was 101° F. On April 27th the child was obviously ill—temperature 101.5°—and, in addition to the lower limb, the left forearm and hand were oedematous and also the lower part of the back. On April 28th the swelling had completely disappeared from the limbs, but the right side of the scalp was intensely oedematous, extending to the eyelids, which were completely closed. On attempting to open the lids a blood-stained fluid spurted out with some force; the conjunctiva was purplish in colour.

Next day the whole scalp was involved, and both eyes were closed and oozing sanious fluid; the swelling in the left forearm and hand had returned. During the following night there was a copious evacuation of bright blood from the rectum—about half a pint. Recovery now rapidly ensued; in two days the swelling had entirely disappeared, and the child appeared quite well.

The temperature throughout remained at 101° to 101.5° F.; the urine was scanty and loaded with urates; the tongue was dry and the condition was somewhat alarming, especially as he complained of some fullness in the throat. Had this type of oedema invaded the larynx, the condition would have become immediately dangerous.

Treatment consisted in the administration of calomel and salines, followed by calcium lactate, 10 grains every two hours. Recovery appeared to follow the use of the last-named drug in such a way as to suggest that it had an influence on the condition; and in future cases I should begin it at the outset. The possibility of laryngeal invasion was, of course, prepared for.

The child is of intensely nervous type, and reacts acutely to insect bites. Otherwise there is nothing in the history of interest, nor could any reason be suggested for the attack. Of interest was the distribution of the swelling, the fact that the right limbs and other parts were unaffected throughout suggesting a nervous origin.

Haywards Heath. REGINALD ALDERSON, M.D., B.S.Durh.

HERPES AND VARICELLA.

IN connexion with the suggested relation between these diseases the following cases merit record:

On April 10th A. L. came to Tunbridge Wells with his wife and son F. L. They stayed in small apartments, and, as the weather was wet, were pretty closely associated. On April 13th A. L., aged 49, complained to his wife of a sharp pain in the right groin and leg. Two days later a few vesicles appeared on the right buttock and were

followed by a gradually developing herpetic eruption, commencing in the inguinal region, and distributed over the inner side of the right thigh and calf. When I first saw him, on April 17th, the case was typical and it followed a normal course.

On May 1st F. L., aged 18, noticed a few small pearly spots on his forehead, and by May 3rd he was covered with hundreds of typical chicken-pox spots, distributed all over the body, accompanied by considerable fever and much constitutional disturbance. So far as can be ascertained he had not been near any case of chicken-pox.

Tunbridge Wells. CLAUDE WILSON, M.D.

Reports of Societies.

RUPTURE OF THE UTERUS.

AT a meeting, held on June 3rd, 1920, of the Section of Obstetrics and Gynaecology of the Royal Society of Medicine, Mr. J. D. MALCOLM, President, in the chair, Mr. PHILIP D. TURNER communicated an account of a case of traumatic rupture of the pedicle of a subperitoneal fibroid.

A lady, aged 47, fell 6 ft. while cycling and pitched on her left hip. The next day there were signs of intraperitoneal injury and effusion of blood; a hard calcified fibroid was to be felt rising out of the pelvis. The abdomen was opened twenty-four hours after the fall; the peritoneum was full of blood and clots, and blood was seen to be issuing from a longitudinal tear in the pedicle of the fibroid, which was calcified, pedunculated, and attached to the fundus uteri. The fibroid was removed and two small arteries which were found to be bleeding were underrun; the wound in the fundus was closed by deep stitches. Recovery was uninterrupted.

Dr. FORD ANDERSON read a short communication on a case of rupture of the uterus treated by gauze packing.

A 4-para of 33 was delivered elsewhere of a fetus of about four months, which presented by the feet; delivery was said to have been easy, although the accoucheur subsequently discovered a tear of the cervix extending outwards on the left side. He removed the placenta "with the fingers," and found intestinal coils within the uterus. Dr. Ford Anderson first saw the patient fourteen hours after delivery, when she was in a state of extreme collapse; blood was oozing from her, the uterus was relapsed, and the cervix was contracted. Examination under an anaesthetic showed a coil of (probably) large intestine in the uterus, the fundus of which was transversely torn for three or four inches. The tear of the cervix on the left side was quite independent of this. Operation was judged to be inadvisable, and under anaesthesia, in Sims's position, with raised pelvis, the prolapsed bowel was replaced, and contraction of the lax uterus being stimulated by pressure of the left hand on the fundus, the uterus was packed with sterilized gauze. Thirty hours afterwards the first packing was removed and replaced by a similar one; thirty hours later the gauze was finally removed. The patient, who was kept recumbent, also received pituitrin, morphine, saline solution per rectum, and douches of 1 to 320 lysol, as well as oxygen inhalations. From the first there were swelling and tenderness in the left iliac region, and during the first few days the temperature varied from 103° to 104°; the lochia were fetid. By the eighteenth day the cervical and uterine tears had healed and discharge had almost ceased; pyrexia and evidences of left pelvic cellulitis were still present, when, on the twenty-fifth day, the patient insisted on leaving hospital. Dr. Anderson learned that a pelvic abscess afterwards had to be opened, but that two months later she was completely well.

Convalescence would have been much speedier but for the consequences of the cervical tear. Probably the majority of medical men would hold that in such a case as this operation offered the best prospect of cure. In the present case operation was not considered possible on account of the extremely bad condition of the patient, and the procedure adopted was carried out with but little hope of success. As a result of the present case, and after reading Dr. Herbert Spencer's account in the *Obstetrical Transactions for 1900* (vol. xlii) of four such cases successfully treated by packing with iodoform gauze, the author was inclined to modify his views.

In the discussion that followed, Dr. AMAND ROUTH thought that packing should be reserved for cases ruptured into the broad ligament, or cases in which the laceration had not included the peritoneum. He congratulated Dr. Anderson on the result, but could not understand how the patient escaped peritoneal infection, after replacement of the intestines in an evidently septic case.

Dr. DRUMMOND ROBINSON said that twenty years ago he had a somewhat similar case, in which a mass of intestine protruded from the vulva; the cervix and body of the uterus were lacerated. The intestine was pushed back and the laceration plugged with gauze; the patient recovered and subsequently had two children.

In reply, Dr. FORD ANDERSON pointed out that the bowel, which had not prolapsed beyond the cervix, was replaced with all possible aseptic precautions.

He quoted a letter in which Dr. Herbert Spencer, after stating that packing was the best treatment for many cases, said that though many cases had been recorded as successfully treated by hysterectomy, many of these had been badly treated by version, etc., and should not have been ruptured at all. Dr. Spencer also wrote that "one Russian obstetrician had a long list of such cases, which were no guide to the treatment of the ordinary cases of rupture seen in a condition of profound shock."

Dr. W. FLETCHER SHAW and Dr. ARTHUR BURROWS read a paper on Wertheim's hysterectomy for advanced carcinoma of the cervix, made possible by the use of radium. [This communication was summarized in our issue of June 12th, p. 806.]

In the discussion which followed, Dr. R. A. GIBBONS stated that before the war the late Dr. Pozzi of Paris told him that he had been working on this subject for some time, and had operated on many cases which before the application of radium had been regarded as inoperable.

Dr. A. W. BOURNE related a case of spontaneous rupture of the uterus following pituitrin. The patient was a 12-para, whose previous labours had been easy.

The twelfth labour being slow, ½ c.cm. of pituitrin was administered hypodermically when the cervix was fully dilated, and the head in the perineum. An hour later the pains became extremely violent, and the patient suddenly collapsed; the head receded and the pains ceased. When admitted to St. Mary's Hospital she was in a condition of profound shock; the abdomen was soft, the fetal parts could be easily palpated through the abdominal wall, and there was dullness in both flanks. After an intravenous injection of gum solution and a hypodermic injection of ¼ gr. of morphine, an attempt was made to deliver the patient. The head was removed by perforation and cutting through the neck, but before the rest of the child could be removed the patient again collapsed, and in spite of blood transfusion she died at 1 a.m. *Post mortem*, the child's trunk and the placenta lay free in the abdomen; there was a rent five inches long in the uterus, beginning in the lateral wall and lower segment and extending downwards and inwards to the cervix.

Dr. Bourne considered this case noteworthy on account of the rupture occurring in the absence of any obstruction, and after a sluggish and short labour when the head was in the act of being born.

Dr. WILLIAMSON said that he had seen a case of spontaneous rupture of the uterus following the administration of pituitrin before the cervix was fully dilated. He believed and he taught that the use of pituitrin before the birth of a child was a dangerous procedure.

Dr. FLETCHER SHAW was certain that a large number of cases of rupture occurred through the administration of pituitrin; he taught his students that it must never be given before the termination of the second stage, except in haemorrhage.

Dr. EARDLEY HOLLAND stated that in his opinion pituitrin might be a source of grave danger to the mother and fetus, and alluded to the dangerous effects produced by the so-called sensitization of the uterus by the administration of pituitrin preliminary to the introduction of bougies. In two cases of this he had seen tonic contraction of the uterus. Pituitrin was often responsible for the death of fetuses; he had performed *post-mortem* examinations on at least four with tears of the tentorium cerebelli and cerebral haemorrhage brought about by a precipitate second stage of labour following injection of pituitrin. Dr. FORD ANDERSON thought that pituitrin, if used at all before the birth of a child, should be employed with all the precautions which had always been enjoined for ergot of rye.

IN the first number of *The Handicapped Worker*, issued by the New York Institute for Crippled and Disabled Men, Miss Gertrude R. Stein summarizes the work which has been done in the United States for industrial cripples as distinguished from ex-soldier cripples. Organized training has been authorized by the Legislature of eleven States, in five of which the work has already been begun. In other States the provision of training and employment for the crippled is left to voluntary specialized employment agencies. Generally the aim has been to deal with the cases intensively, and it has been sought to deal thoroughly with few rather than superficially with many.

Reviews.

DISEASES OF THROAT, NOSE AND EAR.

THE third edition of PORTER'S *Diseases of the Throat, Nose, and Ear*[1] has been revised by his friends and colleagues under the editorship of Dr. LOGAN TURNER. The second edition was produced in 1916, but unfortunately the author, who had become Major Porter, D.S.O., was killed in France while serving with the Royal Artillery in the following year. The object of this book is to provide the practitioner and senior student with a volume of moderate size, containing sufficient information on the subject to be of practical value, without entering into the details of operative surgery. The book fulfils its purpose admirably and is kept within the intentionally limited scope. The new edition is brought well up to date, especially in the section which deals with diseases of the ear. There are, however, some portions in which the advice given as to treatment may reasonably be considered open to criticism, particularly when it is remembered into whose hands the book is intended to pass. Thus a much more active treatment for laryngeal tuberculosis is described than is now considered beneficial or even safe by those most experienced in the subject. Again, the siphon douche for the nose is described and there is even a figure of it in use, whilst its dangers are stated to have been exaggerated; they are, however, widely recognized and the method has been generally abandoned. The illustrations are, perhaps, rather limited, but include seven coloured plates containing forty-four illustrations. The value of such coloured plates is a little doubtful, and they are, of course, expensive to produce, so that it might have been better to have increased the number of illustrations in black and white instead. Nevertheless the coloured plates are good of their kind and form an attractive feature of the book. The book should continue to serve the good purpose which the success of the previous editions shows it has served in the past, and it may be recommended both for the convenience of its size and the excellence of the text. The editor and his collaborators are to be congratulated on the good taste they have shown in choosing this method of perpetuating the memory of their former colleague; they have carried out their task just as he might have desired could he have made his wishes known.

Mr. TILLEY has rendered a notable service to British laryngology in producing a fourth edition of his well known book on *Diseases of the Nose and Throat*.[2] During the space of eleven years which has elapsed between the last two editions the progress of laryngology has been rapid, and as a result the latest edition exceeds the former in length by some 300 pages, but the use of thinner paper to some extent compensates the increase in bulk. It may be said at once that with the exception of the chapter dealing with asthma and hay fever, in which there is no reference to the modern views connecting these conditions with anaphylaxis, the reader will find the most recent information upon any subject about which he may seek enlightenment. Nor will he search in vain for any topic connected with laryngology, for all methods of bronchoscopy and oesophagoscopy are fully described. A chapter on diseases of the oesophagus and another on diseases of the trachea are to be found, as well as sections on intranasal dacryocystotomy and the removal of pituitary tumours. The author strongly advocates the intranasal operation for chronic empyema of the frontal sinus, and is of opinion that the dangers of the external operation, to which he himself so candidly drew attention some years ago, may be to a great extent eliminated by this means. The parts of the book dealing with operative surgery have been amplified with considerable judgement. The various methods of removing nasopharyngeal fibroma, for example are fully discussed in this edition, and there is an excellent description of laryngo-fissure illustrated with very clear drawings supplied by Dr. Irwin Moore. All through the book the drawings are admirable and the author has wisely refrained from introducing coloured plates. There are naturally blemishes and inequalities in a book of this size; for instance, it is difficult to understand how the operation of submucous resection can be performed through the incision which is both described and figured, and the subject of malignant disease of the pharynx is treated somewhat briefly. The work, however, is so comprehensive that it should be a valuable book of reference, whilst it is not too large to serve as an ordinary textbook. The most attractive and perhaps the most valuable feature of the book, which distinguishes it from a mere compilation, is the way in which the personality and observation of the author appear in his writing. Mr. Tilley draws freely upon the wide clinical knowledge he possesses in order to illustrate his points, without quoting tedious histories of cases, and the reader is made to feel that every piece of advice offered is the result of personal experience.

The second French edition of Dr. GEORGES LAURENS'S *Oto-Rhino Laryngology*[3] has been translated by Mr. CLAYTON FOX, who has kept faithfully to the text; the translation, indeed, is apparently so literal that it has occasionally led to minor errors. The book is written for the student and practitioner, and contains a surprisingly detailed account of how to examine and treat patients, telling both what to do and what not to do. This detailed account of how to grapple with the elementary problems which beset the beginner forms the main theme of the book, and, carefully studied, it should prove of great value to anyone commencing to learn about the examination and care of patients in this department of medicine. It is the minor difficulties, which are often so bewildering and exasperating, that the author seeks to solve for his reader, and to render his points clear there is a profusion of simple line drawings which adorn practically every page. It must be understood, however, that it is French methods and opinions which will be gained from a study of this book, and that they do not in every way coincide with the accepted English practice. For some this may endow the book with a refreshing novelty and the change from the stereotyped English textbooks may make a successful appeal. Some of the views, however, might prove misleading if accepted without some practical knowledge. Thus, for removal of the tonsils the author says: "Never employ the guillotine." Cancer of the pharynx occupies just half a page, and the section ends "Treatment=0. Especially no surgery. Only palliatives, such as cocaine, morphine, and local applications of pure adrenalin." The work, however, fulfils its object and should prove helpful, especially by virtue of its carefully studied details and its wealth of illustrations.

CEREBRO-CRANIAL INJURIES

PROFESSOR DURET'S monumental work of fifteen hundred printed pages on cerebro-cranial injuries[4] is the outcome of patient labours extending over more than forty years. It was nearing completion when the German army entered Lille, and the Prussian authorities forebore their intention to destroy it, on the grounds of "humanity." So at least they told the author.

The subject truly is big so is the book, but it deals with etiology, the mechanism of production, and with localizing symptoms only. Some idea of the thoroughness of Professor Duret's method may be gained from the mention of separate sections upon the injuries caused by falls from ladders and those by tumbling downstairs. There are masses of facts there are masses of case records; there is a massive index. It will hardly be possible for an intending contributor to current journals not to find here a parallel to his own "unique" case.

We do not recommend the book to the junior student.

[1] *Diseases of the Throat, Nose and Ear* For Practitioners and Students. By W. G. Porter, M.B., B.Sc., F.R.C.S.Edin. Third edition, fully revised under the editorship of A. Logan Turner, M.D.Edin., F.R.C.S.Edin. Bristol: John Wright and Sons, Ltd.; London: Simpkin, Marshall, Hamilton, Kent and Co., Ltd. Toronto: The Macmillan Co. of Canada, Ltd 1919. (Demy 8vo, pp. xv + 300; 79 figures, 44 in colour 12s. 6d. net.)

[2] *Diseases of the Nose and Throat.* By Herbert Tilley, B.S.Lond., F.R.C.S.Eng. Fourth edition London: H. K. Lewis and Co., Ltd. 1919. (Demy 8vo, pp. xx + 844: 265 figures, 74 plates. 25s. net.)

[3] *Oto-Rhino-Laryngology.* For the Student and Practitioner. By Dr. Georges Laurens. Authorized English translation of the second revised French edition by H. Clayton Fox, F.R.C.S.Irel. Bristol: John Wright and Sons, Ltd. London: Simpkin, Marshall, Hamilton, Kent and Co., Ltd. Toronto: The Macmillan Co. of Canada, Ltd. 1919. (Demy 8vo, pp. x + 339; 592 figures. 17s. 6d. net.)

[4] *Traumatismes Cranio-Cérébraux. Méchanisme et Etiologie, Fractures de la Voute et de la Base, Symptomes Localisateurs.* By H. Duret. Paris: Félix Alcan. 1919. (Roy. 8vo, pp. xxx + 1502; 320 figures. Fr.75.)

It is surely intended for the reference library, and will indeed be the envy and despair of those voluminous writers whose fellow-countrymen withheld the hands that had already deliberately destroyed—Louvain.

MILITARY PHYSICAL ORTHOPAEDICS.

IN this country, owing to that unique organization comprising the Military Orthopaedic Centres—later thinly disguised under the ambiguous title of Special Surgical Centres—all the methods of treatment included in physiotherapy were rapidly standardized and the knowledge thus gained widely diffused. Lieut.-Colonel A. S. HERBERT, of the New Zealand Medical Corps, working during the war isolated from such opportunites, developed a hospital in New Zealand in which purely non-operative treatment was given. He has expressed his views on the physio-therapeutic treatment appropriate for the results of gunshot injuries of nerves in a small work—*Military Physical Orthopaedics (Part I, Gunshot Wound of Nerve)*.[5] Written in 1917 but, owing to difficulties in printing, published in 1918, this little book has now lost some of its interest. In the chapters dealing with the examination of patients with nerve injuries and general physical methods of treatment, the author proceeds on conventional lines. A goodly proportion of the book is devoted to a consideration of the use of artificial muscles. It is claimed that an elastic band may act either as a passive support or as an active muscle, the latter only if it is attached to an opposing muscle which normally contracts simultaneously with the muscle which is paralysed in the particular case. This is the real thesis of the book and is claimed as original by the author. His reasoning is, however, unconvincing. His plea for simplicity in temporary apparatus is sound, and, in the conditions under which he worked, his employment of elastic supports designed to maintain relaxation of paralysed muscles showed considerable mechanical resource. He recommends the maintenance of full extension of the fingers in musculo-spiral paralysis, but no doubt since this was written he has had many chances of seeing the unfortunate results of this exaggeration of the principle of muscle relaxation. The book in its make-up suffers from the disadvantage of having all the illustrations grouped together at the end of the letterpress.

NOTES ON BOOKS.

THE book on practical urology,[6] by Dr. I. COHN of Berlin, is a straightforward pedestrian account of the subject for medical men who have to deal with diseases of the kidney, bladder, and urinary passages. It is also suitable for medical students with a knowledge of German. The author treats his subject throughout from the practical rather than the scientific point of view.

The *Tenth Annual Report of the Commissioner of Health for the Commonwealth of Pennsylvania*,[7] for the year 1915, dated 1918, is a large and well printed volume in which all sorts of matters connected with the public health of this extensive district are reported on in a style both statistical and discursive. It is clear that the sanitary organization in the Commonwealth has reached a high degree of complexity and shows great evidences of activity.

Salies-de-Béarn.

Situated in the Basses-Pyrénées, not far from Pau, Salies-de-Béarn is a mineral water station, some two hundred feet above sea level, with a warm climate, and most frequented in spring and late autumn, though open all the year round. Its mineral water, coming from the Bayâa spring, contains 25 per cent. of solid matter, mainly sodium chloride; in addition sulphates, bromides, iodides, and metals of the alkalis and alkaline earths are present, but the spring shows no radio-activity. The waters are for external application only and are yellowish in colour; they are employed pure or diluted, as baths or as douches. The mother liquor left behind after removal of most of the sodium chloride, comparatively rich in bromides and iodides, is also used for baths and for compresses. The establishment is fitted with 140 baths, and is well provided with apparatus for special bathing, douching, and treatment by hydrotherapy of all sorts. Dr. DAVID[8] describes the waters as beneficial in a great variety of disorders, including chorea, exophthalmic goitre, locomotor ataxy with lightning pains, muscular atrophies of many varieties, stiff joints, and phlebitis. There is also a special establishment for the treatment of gynaecological cases of all sorts, and another for the treatment of children with rickets and all forms of chronic tuberculosis of the glands, bones, joints, and peritoneum. Professor Reclus, it is said, obtained excellent results in tuberculous orchitis at Salies-de-Béarn.

[5] *Military Physical Orthopaedics. Part I., Gunshot Wound of Nerve.* By Arthur Stanley Herbert, M.D., B.S., Lieut.-Colonel New Zealand Medical Corps, P.M.O. of the Rotorua Orthopaedic Hospital, Government Balneologist. Wellington: Marcus F. Marks. 1918. (Demy 8vo, pp. 135; 62 figures. 6s. net.)

[6] *Urologisches Praktikum.* Mit besonderer Berücksichtigung der instrumentellen Technik. Für Aerzte und Studierende. By Sanitätsrat Dr. I. Cohn, Berlin. Berlin and Vienna: Urban and Schwarzenberg. 1919. (Cr. 8vo, pp. x + 391; 79 figures, 3 plates. M. 15.)

[7] *Tenth Annual Report of the Commissioner of Health for the Commonwealth of Pennsylvania*, 1915. Part II. Harrisburg, Pa.: J. L. L. Kuhn. 1918. (Med. 8vo, pp. 1559; illustrated.)

[8] *Quelques précisions rapides sur Salies-de-Béarn et le rôle de ses Eaux en Chirurgie.* Par Docteur David, Ancien Professeur à l'Ecole de Médecine, de Limoges, etc. Limoges: Imprimerie-Librairie Ducourtieux et Gôut. 1914. (Demy 8vo, pp. 22.)

THE ROYAL ARMY MEDICAL DEPARTMENT

APPRECIATION OF ITS SERVICES DURING THE WAR.

THE dinner in appreciation of the splendid services of the Royal Army Medical Department and the eminent civilians attached to it during the war, which was held at the Connaught Rooms on June 8th, was briefly reported in our last number at p. 807. Below we give some account of the impressive speeches made in proposing and responding to the toast of the evening.

The EARL OF MIDLETON, K.P., who presided, said that the medical record of the war just gloriously terminated was all the more inspiring when one reflected upon the chequered history of the medical service previously. In every former war the medical service had been hurried into the field although its peace time strength had been starved, its pay insufficient, and it had been denied leisure and opportunity for scientific training; it had suffered also from being secluded by a watertight partition from the great civil profession which was its only effective reserve, and it had had scant opportunity for practising modern surgery. In the field it invariably took a back seat; the last man to hear of any intended move was the senior medical officer. Lord Midleton dated the beginning of reform from Lord Wolseley's adjutant-generalship in the eighties. Under Wolseley and under Roberts the men who held commands in peace were so chosen as to hold commands in war, the equipment designed for peace was made the same as that designed for war, and the gap between civilian and professional soldiers was so bridged over that the professional service became capable of developing into a truly national force. In the Army Medical Department these principles were so applied in the years before the great war that the department was able to conciliate the support of the great civil profession, and the equipment was overhauled so that no change had been necessary in any of the campaigns since 1914. A new chapter began with the organization of a Sanitary Branch in 1908, and while typhus, that scourge of armies from time immemorial, had been kept wholly at bay, the low figures for enteric fever in the recent war, especially when compared with the ravages of enteric in South Africa, constituted the war's finest record. Had the incidence of cases of the typhoid group in the recent war reached the level of the South African war, the cases would have numbered nearly a million and a quarter, and the deaths 160,000. Instead of that, our records in France, Egypt, Salonica, Italy, and Mesopotamia showed but 15,800 cases and 766 deaths. (Applause.) The expansion of the R.A.M.C. was also a remarkable achievement. In July, 1914, the corps consisted of 800 officers and 9,000 other ranks; in 1919 it included 16,000 officers and 152,000 other ranks. By that time it exceeded in size the original Expeditionary Force which left these islands at the beginning of the war. Nor did these figures tell the whole story, for the vast amount of freely given service by busy civilian practitioners in attendance at the hospitals, not forgetting the V.A.D.'s and others, must be put on grateful record. It was the greatest of tributes to the successive heads of the Army Medical Department at home and abroad that this gigantic multiplication did not lead to hopeless confusion. The chief guest of that evening, Sir Alfred Keogh, typified the administrative genius, the executive efficiency, and the scientific skill which carried through this great adventure.

He it was who turned to account the reforms with which the names of Sir Frederick Treves, Sir Alfred Fripp, and Sir Cooper Perry would always be associated. During four fateful years Sir Alfred Keogh had wielded an autocracy which only an Irishman could appreciate, and which even an American President might envy. (Laughter.) He engaged 20,000 of the civilian practitioners of the country; he "cornered" the quinine of the world, and he was never at a loss whatever the emergency. His mantle had well fallen upon Sir John Goodwin, whose name also he coupled with the toast; yet another name to be added was that of Sir George Makins, who was a fit representative of the men to whom military rank could add no further eminence (Applause.)

Mr. WINSTON CHURCHILL, Secretary of State for War, associated himself with what Lord Midleton had said. Every form of national effort which produced the devices of destruction had had its tribute, but surely those also who, under conditions of equal hardship and danger, had been saving life while others had been taking it, healing wounds while others had been inflicting them, were entitled in fitting season to their meed of popular applause. This island nation with its Empire gathered about it had suddenly to embark upon a vast enterprise. Everything had to get forty times bigger than it was before. For the first year or so of the war the men who were right were the men who thought bigger than anyone else dared to think. In no instance was this multiplication more remarkable than in the Army Medical Department. Seven thousand beds were available for its use when the war began, and 700,000 when it ended. Judged from the standpoint of bulk and magnification alone, nothing was more wonderful, not even the multiplication of man-power generally or the production of artillery and explosives. But there was more than multiplication. The improvement in the methods of treating this great mass of human suffering—these shattered figures who were thrown back upon the healing science of the British nation—was as impressive as the multiplication itself. And how greatly did this matter to the hundreds of thousands of men who cast themselves on the mercy of the R.A.M.C. and never found that mercy lacking! No one knew anything about the war who had not been in a large casualty clearing station six or seven hours after a great battle had begun. A more terrible spectacle, a spectacle more calculated to imprint itself indelibly upon the mental retina, could not be. And the only comfort a sound and healthy man had when he saw the appalling misery which was poured from one automobile after another was that everything that a passionate humanity and sympathy could suggest and that science and professional skill could execute was at the disposal of those heroic beings who lay scattered in this sea of helplessness and pain, while the cannonade thundering in the distance gave promise of yet more to come. The R.A.M.C. achieved a better, a more humane, a more scientific, a more refined treatment than was arrived at by any other of the great nations who were engaged as deeply in the war. It would be wrong, Mr. Churchill concluded, to dwell upon the achievements of the R.A.M.C. without making the fullest acknowledgement of the immense services rendered so freely and generously by the eminent civilians. The R.A.M.C. could not have achieved what it did, either in the domain of medicine and surgery or in that of military hygiene, had it not received this immense reinforcement from the finest scientific brains in the country devoted to the healing of human suffering. (Applause.)

Field-Marshal Earl HAIG said that he knew he expressed the feeling of the commanders in the field when he thanked the R.A.M.C. and the eminent civilians for all that they did to help in winning the war. It was impossible to exaggerate the debt. He recalled the work of the attached medical units when he commanded the First Army (1914–15) during the fighting on the Aisne. At that time the dressing and evacuating of the wounded was particularly difficult and exacting. It was their first experience of trench warfare, and the trenches were unlighted, and altogether very poor compared with those subsequently made. The corps suffered heavy casualties, there were no motor ambulances available, and the conditions altogether were most trying. But the conduct of the medical units was perfectly splendid, so unselfish and devoted. (Applause.) Some leaders like himself, who realized that the success of the army depended very much on an efficient medical service, viewed with misgiving the difficulties consequent upon its great expansion, but as the army grew the medical service grew with it, and remained throughout its multiplication thoroughly efficient. The problem which the service had to deal with was huge, but everything worked smoothly. All ranks showed devotion and gallantry, alike the regimental medical services, the field ambulances, and the medical corps of the Dominions. That they all sustained heavy casualties demonstrated how zealously they did their duty. He would like to bear witness to the good feeling and confidence which existed between the fighting portion of the army and their medical comrades, and also to acknowledge his personal indebtedness to Sir Arthur Sloggett (to whom this good feeling and confidence was largely due) and Sir Charles Burtchaell, and their deputies, Sir William Macpherson and Sir H. N. Thompson. The untiring professional zeal of the civilians was also beyond all praise. He would mention the names of two senior consulting surgeons, Sir George Makins and Sir Anthony Bowlby, and of two consulting physicians, Lord Dawson and Sir John Rose Bradford. Another name he must mention was that of Sir Wilmot Herringham, of whose devotion in a casualty clearing station on one occasion he had a vivid recollection. He concluded with a word of praise to the scientists who had helped to make the gas attacks innocuous. All alike had played the game as men. (Applause.)

There were three responses to the toast.

Sir ALFRED KEOGH, after making his personal acknowledgements of the wonderful tribute paid to the work of the Army Medical Service and to himself, said that the first great inspirer of the medical department was Lord Herbert of Lea, and there was always to be associated with this War Minister of the middle nineteenth century the name of Florence Nightingale. In latter days the army had had two statesmen who understood the Army Medical Department. The first was Lord Midleton and the second Lord Haldane. What Lord Haldane did could never have been accomplished but for the labours of his predecessor. Lord Midleton gave them the opportunity of post-commission study, established the Royal Army Medical College and reconstituted their units. Lord Haldane enabled them to come into organic union with their brethren of the civil part of the profession. There were not two professions, but only one, and there was no great difficulty therefore in joining together in the great Territorial service which Lord Haldane set up. After paying a warm tribute to the Red Cross Society and emphasizing the need for its existence, Sir Alfred Keogh went on to refer to the cordiality of the general officers commanding in the field, without which it would have been impossible for the medical service to have done what it did. This held good not only in the armies in France, but in Salonica, Palestine, the Dardanelles, and later on when the War Office took over the Mesopotamian campaign. Nothing could have been done in the Mediterranean area, for example, had it not been for the noble Field-Marshal (then Commander-in-Chief at Malta (Lord Methuen), who was present that evening, and to whom he was eternally grateful. (Applause.)

Sir JOHN GOODWIN said that whatever success the R.A.M.C. had in the recent war was due to three main factors: the progress which had taken place in the medical services during the twelve years since the end of the South African war; the action of the civil profession who from the outbreak of the war came forward and placed everything at the disposal of the army; and the great change which had taken place in the direction of a better understanding between the army generally and the medical service. He believed that the British army had at present the best army medical service in the world, but it was capable of improvement, and he hoped that improvement would be forthcoming. Social unrest in England would, he believed, now be much more pronounced were it not for the fact that every man who had served in the war knew, and his relatives also knew, that an honest endeavour was made throughout to prevent distress and relieve suffering. It was now no longer a question of the civil profession on the one side and the R.A.M.C. on the other. They had all served together, and together they had passed through trials and vicissitudes. A thing never to be forgotten also was the early co-operation of America in the matter of medical provision. He went over to the United States and interviewed General

Gorgas and others, and within a very few months more than 1,000 American doctors and 700 nurses, equipped, uniformed, and paid, were placed unreservedly at the disposal of the British armies. (Applause.) Speaking for himself, he said that he entered upon his present post with trepidation, but he had served under two Adjutant-Generals, and from them and from the members of the Army Council he had received every possible sympathy and kindness.

Sir GEORGE MAKINS said that of all civilians who took part in war service the men of his own profession were the most happy, for they were called upon to do work in connexion with the army which was the same work they had been accustomed to do all their lives. They had the satisfaction of feeling that they brought to the Army Medical Service a source of medical strength, and they also, many of them, were taken out of the ruts of a somewhat monotonous practice and saw new countries and made new friends. He himself was supposed to be responding for the senior civilian surgeons, but as much or more was due to the junior members of the profession who formed the rank and file. Moreover, great as were the triumphs of surgery in the war, the advance in medicine was equally impressive. The success of the Army Medical Service was due in no small part to the enlightened policy of the authorities of the War Office and the Army Council.

GRADUATE MEDICAL EDUCATION IN THE UNITED STATES.

BY

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A RECENT visit to America, as representatives of the Royal Colleges of Physicians and Surgeons, in response to the invitation of the National Board of Medical Examiners to visit their examinations, afforded full opportunities of inspecting the chief medical schools. This experience has impressed upon our minds that graduate education is attracting much serious attention, that steps with this aim in view are being actively pushed forward, and, further, that the direction in which the most important developments are occurring is different from that in this country. In Great Britain graduate or post-graduate[1] teaching is mainly arranged for men in general practice who wish to keep up to date, and consists in revision or "refresher" courses of comparatively short duration, or in attendance on the clinical practice of their old schools. In the United States graduate education is divided into (1) short courses, much on the same lines as the post-graduate teaching as usually understood in this country, and (2) a form of advanced and intensive education lasting one to three years, and aiming, as its finished product, at rendering a man fully qualified to practise medicine or surgery in the highest or most specialized branches, or to undertake research or teaching. It is to this form of graduate education that some of the more progressive American schools are paying great attention, and it is for facilities of this kind that American graduates coming to this country may in the future be expected to make inquiry. As this does not appear to be generally recognized in this country it may be well briefly to describe this form of graduate education in America.

For this advanced and intensive graduate education, extending over one to three years, there is already very considerable demand, and it is rather surprising to learn from the recent Report of the Committee on Graduate Medical Education, appointed by the American Medical Association,[2] that during the year 1919–1920 there were probably four thousand applicants for this form of graduate teaching. The vast majority of these applicants were anxious to specialize in some branch of clinical practice, those aiming at a public health career, or at teaching posts, or at research work in the fundamental subjects of anatomy, physiology, biochemistry, bacteriology, or pharmacology, forming a very small minority. Thus out of 1,021 inquiries for graduate work at the Mayo Clinic, Rochester, since January 1st, 1919, four only were primarily for work in the fundamental branches, though 90 per cent. of the "fellows" taking clinical work as their "major" subject chose pathology as a "minor" subject.

To make the general ideal of this form of graduate education clearer the following extract may be quoted from the above mentioned Report of the Committee on Graduate Medical Education:

> Most of these men need opportunity to work alone, not in classes though under general supervision, for six months to a year in one or more of the fundamental branches. They then need clinical material and laboratory and library facilities for two or more years of intensive work in diagnosis and treatment. They need personal responsibility for patients, inspiration to investigation, keen criticism, and opportunity for fearless discussion with real leaders in their specialty. They need little, if any, formal teaching, of which most of them have already had too much. It is believed that these needs might be met in large measure by medical schools and hospitals if their present resources were more definitely organized with that end in view.

As regards the steps that have been taken in America to meet this want: although the American Committee consider that "opportunities by which graduate students may properly prepare themselves by long periods of work for scientific and skilful practice of clinical specialties are wofully lacking," a very substantial beginning has been made, especially by the Mayo Foundation, to which reference may now be made.

Prolonged Graduate Instruction.

The Mayo Foundation for Medical Education and Research was established by Drs. W. J. and C. H. Mayo on a permanent basis in February, 1915, and in the following June the University of Minnesota and the Mayo Foundation entered into an agreement by which the funds and income of the Mayo Foundation are devoted, under the direction of the Regents of the University, to the promotion of graduate work and research in medicine. In 1917 the funds and income of the Mayo Foundation were transferred entirely to the Board of Regents of the Minnesota University; and the staff, clinics, laboratories, library, and records at Rochester, Minnesota, were also put at the disposal of the University. The graduate school, which is thus extremely well endowed and equipped, is put on the same basis as those of the other faculties, and the graduate student is under the same conditions as a candidate for the degree of Ph.D., say, in chemistry. At the University of Minnesota a student takes seven years to obtain the M.D. degree, and then, if he is accepted as a graduate student, he may after three years' work gain the special degrees of Master of Science (M.S.) or Doctor of Philosophy (Ph.D.) in Medicine, Surgery, Ophthalmology, Obstetrics, Pathology, and so forth. Entrance to the graduate school is not confined to graduates of the Minnesota University, for graduates from other universities are selected on the grounds of their work. For admission the graduates must have the bachelor's degree in arts or science or its equivalent, the doctorate of medicine from an acceptable institution (namely, those in Class A of the American Medical Association's classification) and a year's experience as an intern in an approved hospital or laboratory. This endowment provides fellowships and scholarships for a number of graduates; there are about 17 teaching fellowships of the value of 600, 750, and 1,000 dollars for the first, second, and third years respectively, the fellows doing a small amount of teaching and devoting the whole of the remainder of their time, except a yearly vacation of three weeks, to graduate work leading to a degree. There are also 86 non-teaching Mayo fellowships, of which 60 are in clinical and experimental surgery and 12 in clinical and experimental medicine. As a rule there is only one graduate student a year in each subject, but there is some elasticity in this respect. The competition is severe—thus out of more than 1,000 applicants since January, 1919, 42 fellows have been selected. There is a regular scale of fees. If a student does not promise well, he is got rid of, usually before the end of his second year.

[1] It might perhaps be convenient to follow the University of Minnesota in confining the adjective *post-graduate* to the revision or refresher courses taken some considerable time after graduation, and to use *graduate* for education received shortly after graduation and as a continuation of undergraduate study.

[2] Vide *Journ. Amer. Med. Assoc.*, Chicago, 1920, lxxiv, 1248.

Each student on admission selects a "minor" subject which is logically related to his "major" subject—for example, as pathology is to surgery—and is mainly carried on in a laboratory during the first year; in his second year he finishes his "minor" subject and passes an examination in it and in French and German, and devotes himself to his "major" subject; in the third year he does more responsible work; thus a surgeon works in the operating theatre and performs operations of all sorts, and is in charge of the junior assistants; he also writes his thesis for the graduate degree (Ph.D. or M.S.). The Ph.D. degree, which is the most highly prized degree in American universities, as it is not conferred as an honour or compliment, is given for theses of exceptional merit only, and so far only about 5 per cent. of the "fellows" have gained this blue ribbon. The work is done partly at Rochester and partly at Minneapolis, where the buildings of the University of Minnesota are situated, the students moving to and fro for different phases of their work.

In comparing these facilities with those available in this country it is obvious that no such completely organized scheme exists here. The laboratory work in the "minor" subject—for example, pathology or anatomy—could no doubt be arranged for, on the lines of the "advanced student's" work in other branches of science at the universities and elsewhere; but the third year's work, corresponding to that of chief assistant in a clinic, though open to men at their own hospital, would seldom be obtainable by graduate students from outside, and could hardly be open to American graduates unless they had taken some British qualification.

The organization of the Mayo Foundation and Minnesota University Graduate School is so complete that it has been described at some length, but the idea is being taken up by other universities. Thus the University of Pennsylvania is organizing a clinical graduate school on a considerable scale with opportunities of gaining a graduate degree or certificate. At Philadelphia the Medico-Chirurgical Hospital and the Polyclinic have become a part of the University of Pennsylvania, and form the clinical centre of a graduate medical school. This school, with separate administration offices in the University buildings and a separate dean, has associated with it or affiliated to it a considerable number of the special hospitals in Philadelphia. The central hospital has a service of 300 beds. The object of the University of Pennsylvania in establishing this graduate school in medicine is so to train the acceptable graduate in medicine that he shall be properly qualified to begin special medical practice or teaching, and be stimulated to "productive" medical research, and in addition to perform the public service of affording reputable physicians opportunities to keep in touch with medical advances by coming in contact with the newer things in medicine as exemplified by the practice of masters of the various fields of medical work. It is proposed to give courses of one and in certain subjects of two years' duration which, if satisfactorily followed, may lead to a degree or special certificate. There are also four-months' courses, which appear to be on the same lines as the revision classes for practitioners and may lead to a special certificate. It is intended to develop this graduate school so as ultimately to provide courses and instruction and special work in practically all the branches of medicine and its allied subjects. The special degrees to be given are Master in Medical Science and Doctor in Medical Science. The master's degree is to be confined exclusively to those candidates who have become qualified to begin the practice of a medical, surgical, or laboratory specialty, and the doctor's degree to those candidates who have done "productive research", or work of considerable merit. The Master in Medical Science does not, as in the Mayo-Minnesota graduate school, demand three years' work. The University of Harvard gives a certificate in Public Health in Industrial Hygiene after one year's work, the degree of Doctor in Public Health (Dr.P.H.) in Industrial Hygiene after two years' work, and the degree of Doctor of Philosophy in Industrial Hygiene after three years' work, but it does not offer a degree for graduate work in clinical medicine alone as in the Mayo-Minnesota scheme. This school in industrial medicine is a new development, for it is both a training school for medical men who intend to take up work in connexion with factories and a research institution, but it is not part of the graduate medical school of Harvard University, which is fully developed on lines more familiar in this country. Several other universities give the degrees of Master of Science or Doctor of Philosophy for research work in laboratories in the fundamental subjects (anatomy, physiology, biochemistry, bacteriology, and pathology), but not for clinical work.

SHORT COURSES.

A few words may be added about the short courses of instruction to medical graduates in America, which are more on the lines of post-graduate education as understood here. These courses usually occupy from two weeks to four months; and it has been estimated that in the year 1919–20 there were probably 6,000 applicants for these courses. The applicants are—

(*a*) General practitioners, anxious to keep their knowledge up to date, who being established in practice cannot devote more than a short time to this object; the time thus afforded is indeed often inadequate, especially in the case of men whose training in the fundamental subjects (anatomy, physiology, bacteriology, and pathology) has always been deficient or has become so from lapse of time. Accordingly there is not time to obtain a proper knowledge of the fundamental data, and without this basis the full benefit to be derived from these short courses may be problematic. (*b*) A large proportion of the men applying for short courses are "partially prepared clinical specialists," and do so with the object of extending or perfecting their operative technique in general surgery or in some special line of practice.

Most of the applicants for short courses may therefore be regarded as really anxious to obtain a short cut to knowledge. While fully recognizing the difficulty of running these short graduate courses in connexion with undergraduate teaching, the American committee, though expressing their views with great caution, appear to be doubtful if the existing graduate and polyclinic schools, by the provision of lectures, clinical and laboratory demonstrations and training in technique, supply what is wanted; and they urge the university medical schools to give to the better prepared men applying for short courses opportunities for combining diagnosis with treatment. This has perhaps been most fully developed by the University of Harvard, where the medical school offers to graduates the opportunity of taking out courses of varying duration in most of the branches of medicine and surgery. These are termed "practitioners' courses," and mainly consist of classes, restricted to a small number of graduate students, commonly from four to ten. The organization of the graduate division of the medical school of Harvard University is under the direction of Dr. A. S. Begg, the assistant dean, in charge of graduate courses.

THE ROCKEFELLER FOUNDATION GIFTS TO UNIVERSITY COLLEGE AND MEDICAL SCHOOL.

THE purpose of the magnificent gifts, amounting together to £1,205,000, made by the Rockefeller Foundation to University College and University College Medical School, is to help in building up in London an ideal medical school, equipped in all departments on the most modern lines, to serve as a model for other schools. The Foundation has encouraged the Clinical Unit System in America, where it has made large grants for the purpose, but this is, so far as we are aware, the first occasion on which it has extended its propaganda to Europe in this very practical form.

The institution chosen as the recipient of these splendid gifts occupies a unique position. For over a century University College has set a high standard in all departments of learning and education in London. It did not lose hope in the worst times, and it is characteristic of its persistent policy of rising to every occasion that when the policy of the Government with regard to the parliamentary grants to university institutions was made known its Medical School at once accepted the plan of Clinical Units, and courageously established two—the one in

medicine and the other in surgery, both fulfilling the conditions laid down by the University Grants Committee as fully set out in the Memorandum published in our columns on June 5th, p. 775.

The Foundation decided to make this gift after full inquiry. Dr. Wickliff Rose, General Director of its International Health Board, and Dr. Pearce, its Adviser in Medical Education, when in London last year, made themselves acquainted with what had been done towards the establishment of clinical units and the difficulties, chiefly financial, which were hampering the full development of the movement. The other medical schools which had started clinical units, St. Bartholomew's and St. Thomas's, were visited, and the conclusion was reached that the medical school most likely to develop the scheme in the best way was that of University College Hospital. In coming to this opinion the two representatives of the Foundation were probably influenced by the fact that the close connexion of the Medical School with University College was a circumstance very favourable to the growth of an institution providing education in all three stages of the curriculum. They found the provision for the preliminary studies satisfactory, and that the Institutes of Physiology and Pharmacology wanted little. It had long been recognized that the third department of the Medical Faculty of the College—Anatomy—was inadequately provided, and that there was need for an Institute of Anatomy in which the Professor, Dr. Elliot Smith, could properly conduct teaching and research work. Part of the offer of the Rockefeller Foundation is to give to the College a sum of £370,000 for an Institute of Anatomy and for additions to the staff of that department, to that of Physiology, and to those of certain others. The sum is allocated as follows:

	£	£
Institute of Anatomy:		
Site and building	159,800	
Equipment and library	30,000	— 189,800
Capital sum for Maintenance Fund		180,000
		£369,800

This capital sum is for additional staff—namely:

Anatomy	£5,000 a year
Physiology	£2,500 ,,
Other departments	£1,500 ,,
	£9,000 ,,

The fulfilment of the third part of the plan—the establishment on a permanent basis of three Clinical Units in medicine, surgery, and obstetrics including gynaecology—involved many matters of detail which were finally settled by a conference in America between the Executive Committee of the Rockefeller Foundation of the one part, and the Dean of the Medical School (Dr. Blacker), the Director of the Medical Unit (Dr. T. R. Elliott), the Provost of the College (Sir Gregory Foster), and Professor Elliot Smith of the other. The Executive Committee evinced the greatest interest in the project and indicated that help given would be primarily in the interests of medical education and would extend to the hospital, not as a charity, but as a necessary factor in the teaching at the medical school. So far it had only been found possible to allot 30 or 40 beds apiece to the two directors, instead of the 50 or 100 desired, and provision could not be made for obstetrics. University College Hospital fills an island site, but there is a nursing wing which can be converted into wards for 100 to 120 beds with the necessary clinical laboratories. The plan now adopted is to build on another site a nurses' home, a house for resident officers, and an obstetric annexe for 60 beds. For a new department of biochemistry, and for other additional laboratory accommodation needed a site is available at the back of the present building of the medical school. For these purposes the Foundation has promised £400,000.

It was pointed out that the additional beds would increase the annual expenditure of the hospital and that the school would have to meet additional expenses for the unit, for salaries in the biochemistry department and for augmentation of salaries in the pathological department. The Foundation agreed to give a capital sum of £435,000 to yield an annual income of £21,700 towards meeting these expenses—namely, £1,000 to each unit, £3,100 for salaries, etc., in new laboratories, and £15,600 towards maintenance of new beds.

University College Hospital and Medical School.

	£	£
Building and Reconstruction:		
Obstetric Department	109,500	
Biochemical Department	50,750	
Reconstruction in Hospital	105,000	
Nurses' Home	103,000	
Residents' Quarters	31,000	— 400,250
Maintenance...		435,000
		835,250

The Rockefeller Foundation, in making grants of capital sums for maintenance, has in this instance departed from its customary policy, which is to make a block grant to begin with and annual grants for a certain number of years, the institution being then expected to continue its work through support received locally. That the Executive Committee was willing to make this departure from practice is evidence of its readiness fully to consider the particular conditions, and of the desire—displayed all through the discussions—to meet needs in a generous spirit. The committee indicated, however, that it did not depart from its policy of looking to the institution benefited to supplement the grants to a considerable extent. It appears that the additional annual expenditure to be met by the Hospital and Medical School when the whole scheme is working will be from £14,000 to £18,000.

At a meeting of the staff and students of University College on June 11th the Provost announced the terms of the offer and read extracts from a report to the Senate of the University, with whom, at its meeting on June 23rd, final acceptance lies. Professor Elliot Smith moved a resolution expressing appreciation of this munificent and spontaneous gift. By endowing the work of the anatomical department, the Rockefeller Foundation would ensure that the requisite facilities for anatomical teaching and research, in close conjunction with those in physiology and pharmacology, would be provided in accordance with the scientific requirements of the time. It had been, he said, the settled policy of University College to restore anatomy to the position which it should occupy, not only in the medical curriculum, but in the field of research. The general scheme of anatomical teaching in this country was curious; there was no equipment for the study of histology in the anatomy department and no facilities for embryological research or teaching, nor for studying the factors which determined the form of the body. Professor J. P. Hill, Vice-Dean of the Faculty of Medical Science and Jodrell Professor of Zoology in University College, said that the new anatomical institute would lead to a great revival of anatomical teaching and research in this country, and he looked forward to the establishment of a corresponding institute of comparative anatomy.

VENEREAL DISEASES.

National Council for Combating Venereal Diseases.

THE fifth annual meeting of the National Council for Combating Venereal Diseases was held at the house of the Royal Society of Medicine on June 7th, with Lord SYDENHAM in the chair, when there was a large attendance. The Chairman announced his retirement from the post of President by reason of advancing years. The Council, he said, had to deal not only with difficult problems in physiology and psychology but with the opposition of ignorance and prejudice. Nevertheless, the movement had never been so vigorous nor so progressive as now. If the Council's teaching were adopted everywhere much would be done to stamp these diseases out of the country. The rural areas presented special difficulties for the overcoming of which the general practitioner's aid was needed. Much money had been spent on clinics in towns, but the results could not be regarded with entire satisfaction, for nearly half of the 175,000 people who attended left before the treatment was completed.

LORD ASTOR said that the importance to the nation of a clean bill of health was increased by our war losses. During the war there was a constant appeal to the imagination; it was needed to stimulate patriotism and to cause the nation to accept irritating control. Imagination had made people realize the ravages of venereal diseases, though it had led to some rash and exaggerated statements. There were no official

figures giving the incidence of these diseases; but there was a far larger attendance for treatment, which would result in reducing the disease. He was not disturbed at the increase in attendances at clinics; he was relieved that the efforts of the Ministry of Health caused people to come to be treated. Deaths from syphilis were not increasing, nor deaths from general paralysis of the insane and locomotor ataxy. But this did not mean that the extent of the disease was not serious, or that it was not a menace. There was much talk of compulsion, of detention, of notification, and of treatment. Before compulsion was even discussed there must be enough facilities for diagnosis and treatment for those affected. The provision was inadequate now. Nor must it be forgotten that compulsion would lead to much concealment and a consequent failure to apply for treatment. Half the people who talked of compulsion had not realized the special difficulties of this disease, and had not studied previous failures. During the war venereal disease was reduced more by women police and drink-control than by the D.O.R.A. Regulations 40 D. and 13 A. Flexner had exposed the so-called success achieved on the Continent through their system of inspected houses, which had neither wiped out venereal disease nor produced peoples cleaner in body and mind. Nor must the lack of success of the Contagious Diseases Acts in England be forgotten; venereal disease increased in the army during their operation, and decreased when they were abolished. He had dwelt on past experience because methods had been advocated lately based on the same sort of fallacies as those put forward by the advocates of inspected houses and of the Contagious Diseases Acts. It had been urged that the use of packets should either be officially recommended or at least quietly encouraged. Now, the results achieved by the use of packets in the forces were carefully examined a year ago, and the Ministry of Health decided that the case for packets had not been proved, and that the risk to health and welfare by encouraging their use would be serious. Even if packets had proved an unqualified success in the army it would not necessarily involve their success among the civil population, which was not subject to regular examination, treatment, punishment, and control. Packets would give a false sense of security, and would encourage people to take risk, thereby increasing the very disease they were intended to prevent. Experience showed that the instances of their failure were numerous. The Report of the Interdepartmental Committee, which condemned the official encouragement of packets, had been very well received throughout the country. As to policy, they wanted to stimulate medical education. It was essential to bring the general practitioners more into touch with modern science. They proposed to work through the medical schools and through the V.D. clinics. There were now 172 clinics; this was not enough. Rural areas offered special difficulties, and greater facilities were needed for diagnosis and treatment, with special reference to the needs of pregnant women and of seamen. The Council's propaganda, both for adults and for adolescents, must be continued and increased. But while improving the organizations at home they must not forget the propinquity of nations, the extent of modern travelling, and the special temptations of the seafaring population. He hoped the League of Nations, through its Health Section, would help to solve this as well as many other world problems.

Lord Gorell succeeds Lord Sydenham as President of the National Council.

Society for the Prevention of Venereal Disease.

The first annual general meeting of the Society for the Prevention of Venereal Disease took place at the house of the Royal Society of Medicine on June 3rd with the President, Lord WILLOUGHBY DE BROKE in the chair. In his report the honorary secretary, Dr. H. WANSEY BAYLY, M.C., reviewed the progress made during the seven months of the society's existence and reported a considerable increase in membership. Two public meetings were held in London; a Malay Peninsular branch of the society had been established at Malacca, and requests had been received to open branches in many of the chief provincial towns. The views of the society had been communicated by a deputation to nearly fifty members of the House of Commons, who agreed to form themselves into a Parliamentary Committee to further the aims of the society. Branches of trade unions had shown a keen desire to hear lectures on the prevention of venereal disease, and Dr. Bayly had given many lectures to intelligent and appreciative audiences. The medical officers of health of counties and county boroughs throughout Great Britain were thrice circularized, with the result that twelve councils had endorsed the Committee's policy and had recommended that the male inhabitants of their boroughs should be given the opportunity of acquiring knowledge of efficient and immediate self-disinfection.

Lord WILLOUGHBY DE BROKE, in his presidential address, said that the origin of the Society was a White Paper, published by the Government some months ago, setting forth the official view with regard to prophylaxis in the treatment of venereal disease. The Government report and the whole complexion and attitude of the official view was against the policy of self-disinfection as a prophylaxis against venereal disease. It was a self-evident proposition that to avoid contagion one should avoid contact; but it was equally true that, in spite of all the exhortation and lecturing, more particularly in the army, with regard to the dangers of promiscuous intercourse, venereal infection was still proceeding at an alarming rate. Thus, moral prevention, although an excellent thing as far as it went, had hitherto failed to achieve the object of stamping out or even lessening the disease. Dr. SALEEBY expressed astonishment that those who now opposed the Society's policy had themselves connived at the confusion between prevention and treatment which the Society desired to make explicit and put an end to. Sir JAMES CRICHTON-BROWNE appealed for the support of the public, and more particularly of employers of labour. Sir FREDERICK MOTT declared that it would be of the greatest value to the Government, both from the point of view of health and of economics, to support the Society's propaganda. Sir W. ARBUTHNOT LANE and Dr. SEQUEIRA also spoke.

VITAL STATISTICS OF ENGLAND AND WALES.

(*Continued from p. 802.*)

PNEUMONIA.

THE total number of deaths assigned to pneumonia in its various forms during 1918 was 59,666 (33,451 males, and 26,215 females), corresponding to a rate of 2,115 per million of male civilians, 1,330 per million of females, and 1,654 per million of both sexes. These numbers and rates are much in excess of all previous experience, even if the comparison is carried back so far as 1854; they were most nearly approached in 1891, when also influenza was prevalent, and the mortality per million persons was 1,471. The sudden increase in 1918 was due to the great epidemic of influenza. Dr. Stevenson points out that this may be well demonstrated by analysis of the quarterly mortality among females, for whom the figures are scarcely modified by diminution of the civilian population. During the first two quarters of 1918 the mortality from pneumonia conformed very closely to that of the seven preceding quarters, but the third and fourth quarters of 1918 brought increases of 66 per cent. and 169 per cent. respectively. Citing figures from the special report on influenza, Dr. Stevenson estimates that 8,146 deaths of males, and 8,962 of females allocated to pneumonia in 1918, were in reality due to the epidemic of influenza; these increases resemble the increase in influenza in that they were greatest in early adult life, and were practically non-existent in old age. Among females, in addition to these estimated deaths, there were, from June 23rd, 1918, to the end of the year, 41,500 deaths to which both influenza and pneumonia were stated to have contributed. By ascertaining the age distribution of these deaths and comparing it with that of the excess pneumonia deaths of 1918 (that is, the excess of pneumonia deaths during that year over the corrected average of the five preceding years), Dr. Stevenson draws the inference that much of the mortality ascribed to pneumonia in children under 15, and particularly in children under 5, was really of influenzal origin. In normal years pneumonia mortality decreases generally from north to south, and shows a considerable decrease in accordance with decreasing urbanization; these features were not materially modified in 1918, when the influenza epidemic affected all areas with almost equal severity.

DIPHTHERIA AND CROUP.

The 4,801 deaths of civilians in 1918 from diphtheria and croup, of which all but 34 were allocated to diphtheria, correspond to a death rate of 143 per million civilian population, which is a little higher than in 1917, but lower than in the first two years of the war. For children under 15 years of age the mortality rate was 418 per million,

as compared with rates of from 373 to 504 during the preceding eight years. The mortality rate per million living at all ages was 169 in London, 151 in the county boroughs, 150 in other urban districts, and 106 in rural areas. In the north proportionately fewer cases of the disease were notified, but their fatality was very much higher than in the south; in London, on the other hand, the high mortality appears to have been due entirely to the wide prevalence of the disease, its fatality there being lower than in all other areas (82 deaths per 1,000 cases in London, as compared with 118 in the county boroughs, 120 in other urban districts, 107 in rural areas, and 110 in all areas). The distribution of diphtheria mortality among the county boroughs resembles that of scarlet fever in showing exceptional severity in certain Lancashire towns in the neighbourhood of Liverpool.

MEASLES.

During 1918 measles caused 9,787 deaths (including 114 of non-civilians) as compared with 10,538 in 1917. Civilian deaths were 289 per million of the civilian population at all ages, and 867 per million at ages under 15. The mortality was higher in the north and in urban districts. Among the administrative counties the West Riding returned the greatest proportion of deaths, Norfolk, Pembroke, Glamorgan, and London coming next in the order named. The four highest county borough rates occurred in Barnsley, Norwich, Wakefield, and Hull. The Barnsley mortality was extraordinarily high—namely, 4.9 deaths per 1,000 population—a figure which has not been even remotely approached by any county or county borough for at least eight years. At Barnsley all the 233 deaths occurred under the age of 15 years and formed one-third of the total deaths at this age; the majority of the deaths at 2 to 5 years of age were due to measles.

SCARLET FEVER.

Deaths allocated to this disease during 1918 numbered 1,020, including 54 of non-civilians. Civilian deaths corresponded to a rate of 29 per million civilian population at all ages, and of 80 per million at ages under 15; with the exception of those of 1917 both these rates are the lowest recorded in this country. The slight increase for 1918 was entirely due to a rather severe outbreak in and around Liverpool. The mortality from scarlet fever per million living at less than 15 years of age rose from 60 in 1917 to 80 in 1918; the lowest rates previously recorded were 110 in 1916 and 158 in 1911. The mortality is now trifling compared with that prevalent a generation ago; the slight rise above the phenomenally low rate in 1917 is due to the increased severity of the cases, for the number notified fell from 50,061 in 1917 to 49,637 in 1918, the deaths during these years per 1,000 cases notified having been 15.3 and 20.5 respectively per thousand.

WHOOPING-COUGH.

The number of deaths attributed to whooping-cough was 9,892 (4,391 males, and 5,501 females); the corresponding rates of mortality are 296 per million living at all ages, and 893 at ages under 15 years. These rates are the highest for about ten years past, but Dr. Stevenson points out that no rates so low even as these were ever attained during the nineteenth century.

MALARIA.

Deaths from malaria became much more numerous during the latter part of the war, and in 1918 amounted to 197 as against an average of 58 in 1911–14, and 65, 62, and 126 in the three succeeding years respectively. There is good reason to believe that the increase is due almost entirely to deaths in this country of men infected during foreign service. It is reasonable to believe that if the increased mortality were caused in any degree by indigenous infection it would affect both sexes to an approximately equal extent; but of 197 deaths from malaria in 1918, 9 only occurred in females. Confirmatory evidence is obtained by reference to the sex distribution of mortality during periods when malaria acquired in this country still contributed to the English death-rate; deaths from 1881 to 1885 were equally numerous among men and women, but from 1901 to 1910 there were five to ten times as many deaths among men as among women. During the decade 1871–80, 43 per cent. of those dying from "ague" were females, as compared with 4.5 per cent. in 1918. It is noted also that there is no concentration (such as occurred in the partly indigenous malaria of 1871–1890) of the increased mortality to particular counties. Dr. Stevenson states that notwithstanding the recent occurrence of home-bred malaria in some of its old centres—notably Kent—the sharp increase of deaths recorded in late years need occasion no alarm, unless this mortality is found to be concentrated in geographical and diffused in sex incidence. Happily each of these tests yields a negative result. Of the 197 deaths in 1918, 99 were of non-civilian males, and of 89 civilian males 30 were ex-service men and 20 were mariners. Of the 9 females who died from malaria, three were sick nurses, one was the wife of a soldier, two were married to a missionary and a West Coast official respectively, and one was recorded to have suffered from malaria for thirty years.

DYSENTERY.

Deaths attributed to dysentery in 1918 numbered 838 (485 males, and 353 females); in addition, 33 asylum cases were notified as "ulceration of the intestines," and were probably due to dysentery. The 790 cases occurring among civilians yield a death rate of 24 per million (males 32, females 18); these rates are about four times as high as those prevalent before the war. At first sight the possibility is suggested of spread of infection by men returned from foreign service; but this supposition is negatived by the fact that of the total registered deaths no less than 81 per cent. occurred in lunatic asylums, which since 1911 have furnished more than half the deaths from dysentery. In the past the deaths of females in asylums have always exceeded those of males, but in 1918 the deaths of males were rather more numerous. This change corresponds with that described for tuberculosis, and, together with the very large increase in the number of asylum deaths from about 150 per annum before the war to 680 in 1918, confirms the surmise[1] that the increase in mortality has been due largely to staff difficulties, which would chiefly affect the male sides of these institutions, though evidently both have suffered. The remaining portion of the increase of deaths from dysentery is traceable to deaths in hospitals; outside asylums and other institutions deaths from this cause were no more abundant than before the war.

(To be continued.)

[1] BRITISH MEDICAL JOURNAL, June 5th, 1920, p. 775.

A MEDICAL school directed by Alexiensky, of Moscow, has been established at Ekaterinodar in the Caucasus, near the American Red Cross Hospital. The teaching staff consists of professors from the Universities of Petrograd and Moscow who were unwilling to comply with the demands of the new régime.

J. PARISOT (*Rev. méd. de l'Est*, March 1st, 1920) of Nancy, who was consultant to the French Army of Occupation for six months, states that in Germany, and especially in the Rhine provinces, the mortality from tuberculosis before the war was progressively diminishing, and in 1914 did not exceed, and in many cases did not reach, 20 per 10,000 in towns and 15 per 10,000 in country districts. In 1914 the number of deaths from tuberculosis was approximately half of what it was in 1900. On the other hand, the influence of the war on the mortality from tuberculosis was shown by a progressive increase in the death rate, greater and more rapid in the urban than in the rural population. In large towns, such as Mayence and Frankfort, the tuberculosis mortality in 1918–19 was approximately double what it was in 1914. The mortality from tuberculosis diminished in infants of one year and under (a fact explained by the fall in the birth rate) remained stationary in those aged from 1 to 5 years, and showed a slight increase from 5 to 15 years. The mortality was more than doubled for persons aged from 15 to 30 (327 deaths in 1918 as compared with 144 in 1914 for a population of 400,000), amounted to 534 as compared with 323 in 1914 in those from 30 to 60, and was exactly double (114 as compared with 57) in those above 60. The mortality from tuberculosis was a little higher in men than in women, which is explained by the absence of men on military service, these statistics applying exclusively to the civilian population.

British Medical Journal.

SATURDAY, JUNE 19TH, 1920.

THE ROCKEFELLER FOUNDATION GIFTS.

THERE are several points of particular interest about the Rockefeller gifts to University College, London, and its Medical School. In the first place, it is an act of international courtesy and solidarity very deeply appreciated in this country. Professor Elliot Smith told the meeting of the staff and students of University College on June 11th that the members of the Foundation had impressed upon the representatives of University College who went to New York that the fundamental factor which lay behind the offer was a desire to promote friendly intercourse between their country and ours, and a desire to do something that would bring together the two countries in promoting education throughout the world at large.

Perhaps the most important aspect of the great gift, is the scale it sets and the lesson it reads to the Government and the rich men of this country. When last year Parliament agreed to vote £1,000,000 for universities and colleges in the United Kingdom those of us who remembered what it had been in the habit of doing were almost too surprised to rejoice. Now we have an American endowed fund, knowing very well what it is about since it has had experience in the matter, and after expert inquiry on the spot and full discussion, giving a single medical school more than the House of Commons votes for all the universities and colleges. If we subtract the amount allotted for maintenance—as is proper, since the Parliamentary grant is to be annual—we yet find the Foundation giving £590,000 for construction, so that the units may have buildings sufficiently large and sufficiently well equipped for the work they are to do. The House of Commons last year voted £500,000 to be divided among all universities and colleges to help them to recover time and money and men lost during the war.

The way in which the gift came to be made is interesting. The Rockefeller Foundation considers that the Clinical Unit System is at the present day the best for medicine and medical education, and has encouraged its establishment in universities in the United States. The movement for the establishment of such units in this country dates back to the recommendations made by the Royal Commission on University Education in London in 1913. The fundamental idea is set out in the memorandum of the University Grants Committee published in full in our issue of June 5th (p. 775). It is held necessary for university medical education that the latest advances in the sciences which affect medicine should be continually brought into the teaching of the clinical subjects and applied to the observation and treatment of disease. The second proposition is that, in order to ensure that medical education shall be of this scientific standard, and that students shall come into direct contact with knowledge at its growing point, there is needed a system of instruction by teachers who are actively engaged in scientific research and provided with proper equipment, adequate staff, and sufficient time. The unit system supplements but does not supersede the British system of clinical teaching, the virtues of which were sung in the memorandum of the University Grants Committee; and clinical instruction will be given as heretofore by other members of the hospital staff who are engaged in private consulting practice and to whom general practitioners are in the habit of referring cases of interest and difficulty.

The essential of the Clinical Unit System is that each university medical school should have at least three units, inter-related and inseparable, dealing respectively with medicine, surgery, and obstetrics (including gynaecology). This does not rule out other units, as for instance neurology. For each unit there should be a professor or director, devoting the greater part of his time to teaching, treatment, and research—one competent to teach, of sound scientific training, and possessing scientific imagination. The director must have an adequate whole-time and part-time staff, the control of wards containing fifty to one hundred beds, a proper out-patient department, ample laboratory accommodation for research and pathological work, and adequate scientific equipment for effective clinical teaching. Representatives of the Rockefeller Foundation, during a visit to London last year, found that these principles were accepted and in part applied at three of the great schools in London, and formed the opinion that it would be proper for the Rockefeller Foundation to provide funds for the development of the system in one school. After due inquiry they came to the conclusion that the school most likely to make the best use of the gift was that of University College Hospital. The recommendation was accepted by the Executive Committee of the Foundation in America, and after consultation there with representatives of the Medical School it was decided to make a gift of £835,000, a part for construction and a part for maintenance, in the manner indicated in the article published this week at p. 834. At the same time the inquiry showed that the Anatomical Department of University College was established on too narrow a basis and ill equipped. Accordingly the Foundation resolved to make a gift of £189,800 for the erection and equipment of an Institute of Anatomy, and of a capital sum of £180,000 to yield an income of £9,000 a year to provide additional staff for the anatomical, the physiological, and certain other departments.

Another point of significance is that in making the gifts to University College the Executive Committee of the Foundation disclaimed any desire to dictate methods to the staff or to lay on the College any other condition than that the proceeds of the endowment should not be used to relieve existing expenditure on medical education and research. The same policy has been pursued with regard to the gif to the Medical School. It is made in order to establish a complete set of clinical units in one medical school in this country to serve as a model for others. The Medical School of University College Hospital had not been able to give to the directors of the medical and surgical units it established a sufficient number of beds, nor to establish a biochemical laboratory, nor to institute an obstetric unit. The Foundation has come forward to supply these deficiencies in the manner indicated at page 835. But while giving large sums for the erection of an obstetrical department and for a new nurses' home and residents' quarter, to liberate part of the existing hospital, as well as a capital sum to yield £21,700 a year, for increases of the staffs of the units and towards the maintenance of the additional beds in the new obstetric department, its purpose has been to assist medical education, and not to maintain hospital

beds; it has therefore considered that the responsibility for making up the deficit on the annual income (some £15,000 or £20,000 a year) may properly be left to this country.

ANTIANAPHYLAXIS IN THE TREATMENT OF CHRONIC DISORDERS.

In a highly interesting and suggestive essay on the origin, evolution, and treatment of certain non-contagious chronic disorders, Dr. Danysz[1] has propounded a theory of immunity, anaphylaxis, and antianaphylaxis, which is deserving of more than passing attention, for it attempts to throw new light upon both the etiology and the treatment of a number of obscure if commonplace diseases, and gives form and substance to an inchoate mass of opinion. He supports his theory by reports of nearly forty illustrative cases in which the treatment indicated by theory proved successful in practice. He also states that 260 patients have now been treated, on similar lines and with satisfactory results, for a great variety of ailments, such as urticaria, eczema, psoriasis, asthma, neurasthenia, dysmenorrhoea and troubles of the menopause, gastro-intestinal complaints of many varieties, arthritis, rheumatism, albuminuria, not to mention other disorders.

At first sight it may seem that such varied diseases could hardly have a common etiology. But such, nevertheless, is the conclusion drawn by Danysz from the observed fact that they are all capable of cure or amelioration by a single method of treatment. What is the method of treatment? It consists in vaccination with saline suspensions of four or five varieties of bacteria cultivated from the stools; and sterilized by heating to 70° C. for one hour; the particular bacteria selected for use were *B. coli*, enterococci, indeterminate diplococci, very small streptococci, and in some instances also an anaërobe. The mixed vaccine was usually given subcutaneously in doses containing a fraction of a milligram of dried bacterial substance. As a rule numerous doses, at intervals of a few days, were necessary; success seems to have followed the use of either autogenous or heterogenous vaccines. In some cases the vaccine was with success exhibited by the mouth, but in larger doses.

The explanation of how it comes about that so apparently irrelevant a method of treatment as this should cure such a varied collection of diseases is said to lie in the theories of immunity, anaphylaxis, and antianaphylaxis. The diseases are taken to be manifestations of anaphylaxis, or anaphylactic poisoning; the treatment consists of antianaphylaxis by the injection of the poisonous substances (or antigens) responsible for the production of the diseases, and the assumption is made that these poisonous substances are produced by the bacteria growing in the patients' intestines. Before going further, it may be well to offer an explanation of some of the obscure terms used above. An antigen is a poisonous substance, or variety of toxin, that has the property of leading to the production of a specific antibody by the tissues of an experimental animal into which it is injected; the function of the antibody is to neutralize or throw out of action the antigen responsible for its production.[2] At the end of last century it was found that many antigens when mixed *in vivo* or *in vitro* with their corresponding antibodies gave rise to the formation of a precipitate; and that when this happened, the antigen suddenly became very much more toxic to the organism producing the antibody, than it was originally. Investigations in this direction led Richet and Portier in 1902 to invent the term anaphylaxis or negation of protection, the opposite of prophylaxis, to indicate the condition of hypersensitiveness to antigens produced in certain phases after their injection. As a typical case of anaphylaxis or anaphylactic shock may be quoted the sudden collapse that sometimes follows immediately and may even prove fatal on the subcutaneous injection of a second dose of some antiserum. Such shock is attributable to the formation of a precipitate in the circulating fluids of the body, the second injection of the antigen—in this instance an antiserum—precipitating the excess of antibody formed in consequence of the first injection of the antigen and still circulating in the blood. Avoidance of these cases of anaphylactic shock is, of course, of the highest importance in institutions where antiserums are commonly employed, and is often compassed by the method of antianaphylaxis recommended by Besredka. This consists in giving a minute preliminary injection of the antigen a short time before the main bulk of the second injection of antigen is made. The preliminary injection is too small to give rise to any harmful precipitation in the blood stream, but large enough to neutralize the antibody circulating in it and so to prevent any precipitation by the main bulk of the antigen when it is injected a little later.

Danysz describes bacterial vaccine therapy as depending upon antianaphylaxis for its success. The bacterial vaccine is an antigen, and acts by neutralizing the excess of antibody in the patient's system. "In acute infectious disorders," he says, "the appearance of the symptoms actually coincides with that of the excess of antibodies, and the injection of a suitable dose of the infecting microbes, sterilized or attenuated, results in neutralizing this excess of antibody. At the same time the symptoms of the disease disappear." From this it is to be concluded, as has before been surmised, that the pathological manifestations of the disease are anaphylactic in nature, and not provoked merely by the direct action of a bacterial toxin. Danysz quotes a number of instances to show that antigens are not necessarily specific, but may immunize against many other antigens besides themselves. All antigens are chemically complex substances, and from the physical point of view are to be classed as heterogeneous colloids; none are crystalloids. Antigens given by the mouth are destroyed by the normal processes of digestion, and no more seen or heard of. But if an antigen is introduced into the tissues, whether by experimental injection or by the pathological growth of bacteria there, the organism can get rid of it only by the aid of an antibody produced in the living body *ad hoc*. The antigen and antibody combine together, and this combination is to be regarded as the first phase in a series of reactions ending in its digestion and elimination in crystalloid form. Salts and crystalloids do not act as antigens because the organism can assimilate or eliminate them directly without a previous digestion on the above lines.

So much for theory. To sum up, it may be said that the state of anaphylaxis is one of immunity, guaranteed by the presence in the system of an excess of antibody produced by the cells of some or other tissues in the body. But these cells and tissues may be expected to suffer for their abnormal production of antibody; and, indeed, it is known that experimental animals highly immunized by successive injections of foreign proteins or bacterial growths later are prone

[1] *Origine, Évolution et Traitement des Maladies Chroniques non Contagieuses.* Par J. Danysz. Paris: J. B. Baillière et Fils. 1920. (Demy 8vo, pp. 130. Fr. 5 net.)

[2] BRITISH MEDICAL JOURNAL, 1920, i, 266.

to develop chronic disorders of all sorts. Thus they may show pareses, skin diseases, alopecia, rheumatic affections, progressive wasting, and a lack of resistance to intercurrent infections; their viscera and blood vessels, examined after death, always show grave histological changes. It is argued that the constitutions of such animals have been ruined, not by the toxic substances injected into them, but by the excessive activity of their own cells, which are thereby stimulated to produce antibodies to enable them to deal with such substances. Following Metchnikoff, Danysz holds that all sorts of chronic maladies in human beings have their *fons et origo* in intestinal intoxication. He also indulges in some interesting speculations as to the part that may be played by the central nervous system in the curative actions of bacterial therapy and also therapy by use of the actual cautery. He goes further than Metchnikoff in the development of the antibody theory of disease outlined above; and in his treatment he joins those who believe in the non-specificity of much vaccine therapy. His essay is clearly written and closely argued, and will appeal to the speculative physician, pathologist, and physiologist.

THE ARMY MEDICAL SERVICE IN THE WAR.

ON many matters relating to the war the verdict of history cannot be anticipated; the object of yesterday's or to-day's praise may incur the blame of to-morrow, and vice versa. But if there is one verdict less likely than any other to be reversed by the Court of Historical Appeal it is that which, in popular language, declares that "the R.A.M.C. made good in the war." This phrase is never used in any narrow sense; it means, in the mouths of plain Englishmen, that the doctors as a whole who served in the war deserved more than well of their country, and that the medical service of the armies of Great Britain and her daughter nations played a worthy part in the terrible drama enacted in five theatres of war during almost as many years.

The Medical Department of the War Office has had many critics, and we have been among them; but we know, and have often said, that the Army Medical Department, like the service it administers, came with flying colours through the terrific ordeal of the war. While mistakes, of course, were made, the seeds of reform planted long before bore fruit in the Great War, and for the first time in its history the Army Medical Service won a success not surpassed, if indeed equalled, by any other branch of the army. That success, as we said some two years ago, was due partly to skilful administration, but chiefly to the application of scientific methods to the prevention of disease and the surgical treatment of the wounded. The great merit, we continued, of Sir Alfred Keogh and of Sir Arthur Sloggett, his colleague in France, was that from the first they recognized that their true policy was to give as free a hand as seemed to them possible to the civilian surgeons, physicians, and pathologists who came forward to help the army.

We recorded last week that a dinner was given on June 8th to mark the appreciation felt by statesmen and administrators for the services of the Royal Army Medical Department and of the civilians attached to it during the war. A report appears in another column this week of the memorable speeches made by the chairman, Lord Midleton, by Mr. Winston Churchill, and by Lord Haig, in praise of the services rendered by medicine and by the individual doctor. "The manner of doing things," said Lord Chesterfield in one of his Letters, "is often more important than the things themselves; and the very same thing may become either pleasing, or offensive, by the manner of saying or doing it." The public tribute paid to the Army Medical Service last week could not have been happier or more graceful. The chairman, speaking with knowledge of the dark past and of the uphill struggle towards the light, eulogized the work of the medical service and its civilian colleagues. He described Sir Alfred Keogh as typifying the administrative genius, the executive efficiency, and the scientific skill which enabled the guests of the evening, not merely to do immense service to the Empire, but to win for Great Britain her position in military medical science. This was no empty compliment, nor was Lord Midleton's surmise that if a review were held of the departments of the army and the award of excellence were given solely for progress since 1900, the King in ordering the parade would place the Army Medical Department on the right of the line. The R.A.M.C., declared the present Secretary of State for War, achieved a better, more humane, more scientific, and more refined treatment than was arrived at by any of the other great nations engaged as deeply in the war. But, he added with equal truth, this could not have been done had the Corps not received an immense reinforcement from the finest scientific brains in the civilian profession. Lord Haig, in words of obvious sincerity, commended the devotion and gallantry of the medical units under his command, the efficiency of the medical administration, and the happy relations that were maintained between the fighting forces and their medical comrades—Regular, Territorial and Temporary alike.

Sir Alfred Keogh, in acknowledging the signal honour done to himself and the medical service, said he regarded the occasion as a triumph for the Army Medical Department after more than sixty years of endeavour to make itself efficient. He insisted, as he has before, on the one-ness of the medical profession, and said that the regular R.A.M.C. officers in past days had always craved for close contact with their civilian brethren. This attitude, so important for the future of British military medicine, is, we need scarcely add, shared by Sir John Goodwin, the present Director-General. He summed up the matter in his own way by saying that it was no longer a question of the civilian profession on the one side and the R.A.M.C. on the other, for all had served together, and had together passed through trials and vicissitudes.

Much has been done; much still remains to do. Reforms are in progress, and the enlightened policy of the Army Medical Department to-day will, we have little doubt, bring forth further measures of reform. It is a great encouragement for those who have at heart the honour and efficiency of the R.A.M.C. to find generous yet discriminating public acknowledgement of what was done by army and civilian doctors working together during the war, and to know that the value of this co-operation is felt not only by the heads of the Army Medical Service, but by public men in high positions.

HONORARY DEGREES AT THE ANNUAL MEETING.

IN connexion with the forthcoming annual meeting of the British Medical Association in Cambridge, the Council of the University Senate propose for the degree of LL.D. *honoris causa* the following distinguished members of the medical profession: Sir T. Clifford Allbutt, K.C.B., Fellow of Gonville and Caius College, Regius Professor of Physic; Dr. Jules Bordet, President of the Faculty of Medicine and

Director of the Pasteur Institute, Brussels; Dr. A. Calmette, Director of the Pasteur Institute, Lille; Dr. Harvey Cushing, Professor of Surgery, Harvard University; Dr. Simon Flexner, Director of Laboratories, Rockefeller Institute for Medical Research; Dr. P. Giacosa, Professor of Materia Medica and Experimental Pharmacology, University of Turin; Major-General William C. Gorgas, President of the American Medical Association and of the American Society of Tropical Medicine; Sir G. H. Makins, G.C.M.G., President of the Royal College of Surgeons of England; Sir Patrick Manson, G.C.M.G.; Sir Norman Moore, Bt., President of the Royal College of Physicians of London, and Honorary Fellow of St. Catharine's College. The degrees will be conferred at a Congregation in the Senate House on Tuesday, June 29th, at 3.30 p.m.

BIOCHEMISTRY IN THE UNIVERSITIES.

THE University of Cambridge has received from the Commercial Union Assurance Company—acting as trustees for the estate of Sir William Dunn—a sum of £165,000 for the establishment of an institute of biochemistry. The university has provided the site, and of the gift it is proposed to spend £60,000 on the erection of suitable buildings and laboratories; for the endowment of the chair £25,000 will be set apart, and £10,000 is to be invested to provide a salary for the second in command. This, it is hoped, will leave something like £3,000 a year for research. It is certain that the best possible use will be made of the gift, for Cambridge has in Dr. Gowland Hopkins a professor of biochemistry who has done perhaps more than any one man to put this new department of science on a sound basis through his own contributions and through the work he has stimulated in others. His aim will be to get together groups of workers, trained each year, so as to cover the whole ground of research in metabolism. The intention is to begin with bacteria, yeasts and other micro-organisms, and to go on through the plants and vertebrates to the chemical physiology of the vertebrates. It is hoped at once to start a course of biochemistry distinct from the ordinary course of chemical physiology now given to medical students, but without in any way interfering with it. It was only the other day that Mr. Edward Whitley gave £10,000 towards the endowment of a chair of biochemistry in the University of Oxford, and it has just been announced that, on the donor's nomination, Dr. Benjamin Moore has been appointed the first professor. Dr. Moore, who is a Belfast graduate, was at one time professor of physiology at Yale, afterwards professor of biochemistry at Liverpool, and, until he accepted this new appointment, a member of the staff of the Department of Applied Physiology of the Medical Research Council. The gift of the Rockefeller Foundation will provide the University of London with a biochemical laboratory at University College Hospital Medical School, since it includes a sum of £50,000 for site and buildings, and a capital sum to provide £15,000 a year in salaries. The scheme which Professor Hopkins has in mind is sufficient to show that the new study is still in the early stage; with the means now provided it is reasonable to hope that the progress to be made will before long bring results of increasing value to human physiology and pathology.

MEDICAL REGISTER: CHANGE OF ADDRESS.

WE desire to call the attention of every medical practitioner to the necessity, in his own interest, of notifying the General Medical Council of any change of permanent address; otherwise his name may be erased from the *Medical Register*, and he will be put to considerable trouble in getting it restored, and be required to pay a fee of £1—trouble and expense that may easily be avoided by prompt notification to the Registrar. Section 14 of the Medical Act (1858) is quite clear; under it the onus of keeping his address correct rests upon the practitioner, and the Registrar is empowered to write a letter to any registered person, addressed to him according to his address on the *Register*, to inquire whether he has ceased to practise or has changed his address. If no answer is returned within six months the Registrar may remove the name from the *Register*. It is recognized that during the war, when so many practitioners left their homes at very short notice to serve their country, an oversight was easy, and special efforts have been made this year to get into communication with practitioners who may have forgotten to notify a change of address to the Council. These efforts have been so far successful that though the number of letters returned through the Dead Letter Office in connexion with the last election of direct representatives was 1,800 in England and Wales alone, communication has been re-established with the majority of them. There remain 500 persons whose last known address was in England or Wales, but with whom all efforts to communicate have so far failed. In addition to this, there are nearly as many more registered in Scotland or Ireland from whom no reply has been received. Any medical practitioner who is in doubt as to the accuracy of his address should send a communication at once, giving his full name, in BLOCK LETTERS, *and* his usual signature, to the office at which he originally registered. The addresses are as follows: The Registrar of the General Medical Council, 44, Hallam Street, Portland Place, London, W.1; The Registrar of the Scottish Branch Council, 20, Queen Street, Edinburgh; The Registrar of the Irish Branch Council, 35, Dawson Street, Dublin.

MILITARY MEDICINE AT THE IMPERIAL WAR MUSEUM.

ON June 9th the Imperial War Museum at the Crystal Palace was opened by the King. The collection comprises upwards of 100,000 exhibits illustrating the military, naval, aërial, and civil labours of men and women throughout the Empire during the war. It is conceived not as a monument of military glory, but as a record of toil and sacrifice, a place of study for the technician and the historian; this intention was strongly emphasized by the King in his sympathetic reply. The greater part of the exhibition, of course, illustrates the combatant services, but a considerable portion is devoted to the Army Medical Section, in which are displayed nearly a thousand pictures illustrating various branches of medical activity in all zones of the war; a large number of these have been given by the Joint Committee of the Red Cross Society and the Order of St. John of Jerusalem. Among the artists whose work is represented are George Pirie, Hadyn R. Mackey, Edward Martin, Austin D. Spare, Sir John Lavery, and Guy Lipscombe. Special mention should be made of J. Hodgson Lobley's "Loading Wounded at Boulogne," and Mackey's "In the Wake of the Advance." There are also a noteworthy series of water colours and crayon drawings by David A. Baxter, whose "Dawn: Passchendaele" is grimly interesting, and vivid crayon drawings by Muirhead Bone and Claude Shepperson. The Joint Committee has presented several small statuary groups by Benjamin Clemens. The conditions under which the work of the R.A.M.C. was carried out in France are well illustrated in a number of models of regimental aid posts, advanced dressing stations, divisional baths, incinerators, and "disinfestors." A series of photographs and models shows the methods and results of plastic facial surgery. There are also to be seen samples of the provisional limbs provided by the Joint Committee, and exhibits by manufacturers of artificial legs which combine strength with extreme lightness. There is a very large collection of appliances, bandages, instruments, and dental equipment captured from the Germans, Austrians, and Turks; pewter syringes, lead catheters, and a cotton-wool substitute composed of fine wood shavings may be presumed to illustrate the enemy's shortage of war materials. Transport in all

theatres of war is well illustrated by models and photographs, and there are examples of the camel cacolet, the sand sledge, and the wire sand shoes used in Egypt. The Women's Section includes memorials of work in France and Serbia, together with a large display of hospital exhibits of all kinds. Of the Naval Medical Section we gave an account in our issue of last week (p. 807).

THE JENNER SOCIETY.

THE late Dr. Francis J. Bond of Gloucester, who was most energetic and successful in his efforts to defend vaccination, founded the Jenner Society, whose objects were "to collect, diffuse, and popularize knowledge in regard to the history of small-pox and the value of vaccination as a protection against it; to promote the practice of vaccination in a safe and efficient manner; and to further generally the adoption of those modes of preventing and treating disease which rest upon the foundation of Jenner's inquiry." At a time when few medical men thought it was necessary to defend vaccination against the frequent attacks of organized antivaccinists Dr. Bond fearlessly entered the arena. He knew every weak point in the enemy's "argument," and engaged the writers in the press with striking answers drawn from his enormous stock of accumulated evidence. In writing or editing defensive leaflets and pamphlets Dr. Bond displayed conspicuous ability, and the literature he produced is by no means out of date; it is still being widely circulated. Before his death at an advanced age he was assisted in this work by Dr. Drury of Halifax, to whom, in 1913, the affairs of the society were handed over. Since then Dr. Drury has been carrying on the work almost without assistance, and, like Dr. Bond, has taken care that the case for vaccination shall not go by default when, as so often happens, antivaccinists air their mistaken views in the newspapers and before public bodies. He had already won his spurs by his controversy with Mr. Bernard Shaw in the *Daily News* and with Mr. Arnold Lupton, when M.P. for Sleaford, in the *Yorkshire Post*. Again, in 1914 he gave evidence before the Legislative Council of the Isle of Man in opposition to Dr. Hadwen, the antivaccinist. The result was the unanimous rejection of the conscience clause, so that in this respect the Isle of Man is in advance of England. It had been the intention all along to widen the sphere of influence and activity of the society, but the war and other circumstances delayed the accomplishment of this object. It is now, however, announced that the Jenner Society is in due form affiliated with the Medical Research Society, whose honorary secretary, Mr. Stephen Paget, has been an ardent advocate of the fusion; for the purpose of continuing the work Dr. Drury has been elected a member of the committee of the society. The present recrudescence of small-pox in various parts of the country has brought about an increase in the demand for literature and information on the subject of vaccination. Inquiries should be addressed to Dr. Arthur Drury, Landon House, Halifax.

THE MEDICAL INSURANCE AGENCY.

THE report on the work of the Medical Insurance Agency during 1919, made by the chairman, Dr. G. E. Haslip, to a meeting of the Committee of Management on May 27th, showed that it had again been in a position to make grants, amounting to over £1,000, to medical charities. The financial statement indicated that the business done by the Agency continued to grow steadily. The profit earned by the Agency is divided into two nearly equal parts. The one is disbursed in making rebates on the premiums for insurances effected through it; the amount so returned in 1919 was £960, being £280 more than in 1918. The sums thus returned represent a direct saving to the medical profession and have amounted since the foundation of the Agency to a total of over £7,000. The other moiety of the profits is distributed annually in grants to medical charities, in accordance with the policy laid down when the Agency was founded in 1907. The suggestion to establish a medical insurance agency arose out of the provisions of the Workmen's Compensation Act which had become law at the end of the previous year. It imposed liabilities on medical men as employers, and it was felt that facilities to insure against the new risks ought to be afforded. From the first, however, the Agency undertook to carry through insurances of all kinds for members of the profession. The Agency transacts business only with first-class offices, and is in a position to advise on the best form of policy to meet the needs of the particular circumstances and as to the company with which it can most advantageously be effected. The sums distributed to medical charities amount to £5,877 10s. The grants made in 1919 were to the Royal Medical Benevolent Fund and the Royal Medical Benevolent Fund Guild, £325 each; to Epsom College Benevolent Fund, £318 5s.; to the Royal Medical Benevolent Fund Society of Ireland, £25; and to the Birmingham Medical Benevolent Society, £25. The balance sheet for 1919, audited by Messrs. Price, Waterhouse and Co., showed marked progress in the amounts received from the three principal sources of business—life, motor car, and accident insurances. Progress was specially evident in the life assurance business, the number of new policies completed during the year having risen to 63, as compared with 25 and 15 in the two previous years. Owing to the increase in the cost of repairs and in the amount of claims for third-party risks, the companies engaged in motor car insurance business have from January 1st this year increased the premiums by 40 to 50 per cent. over rates that prevailed before the war. The expenses of the Agency during 1919 were larger than in previous years. This is due to various causes, among others to increases in salaries and in the cost of printing, stationery, and postage. Although the Agency has made steady progress it might easily be in a position to do more for medical charities if the number of practitioners who do their insurance through it were to increase. They would be benefiting themselves and at the same time the widows and orphans of brethren who have died prematurely. In the hope of stimulating interest a pamphlet setting out the terms and advantages of various forms of life insurance and endowment policies, as well as other kinds of insurance, has been prepared, and will be forwarded on application to the Clerk to the Medical Insurance Agency, 429 Strand, London, W.C.2.

THE NEXT CENSUS.

THE Census Bill, introduced in the House of Lords by Viscount Astor, was read a second time on June 10th. Its proposals indicate a desire on the part of the Ministry of Health to give effect to recommendations made in the past by medical officers of health and others. Although it is safe to assume that a census will be taken in Great Britain at the end of March, 1921, the bill does not specifically provide for this. What it does is to enable an Order in Council to be made directing that a census shall be taken. The Order must prescribe the date on which the census is to be taken, though the intervals between any two enumerations must be at least five years. This possibility, and we trust certainty, of a quinquennial census in the future is satisfactory, and in these days of rapid industrial developments is increasingly needed. A census may, however, be taken at any time for a particular area at the request and at the cost of a county council, a county borough council, or an urban district council. The particulars to be contained in the enumeration returns must include name, sex, age, occupation, nationality, and residence, as well as information with regard to education, infirmity, and condition as to marriage. They may also include, presumably at the discretion of the Ministry of Health, "any other matters with respect to which it is desirable

to obtain statistical information with a view to ascertaining the social or civil condition of the population." The bill will have the approval not alone of statisticians and public health administrators but of all social reformers, for it is drafted on thoroughly democratic lines, and through its local option clause it will be possible for much more detailed local information to be obtained than has hitherto been possible.

CAMBRIDGE.

WE print this week at page 845 the seventh and concluding article of the series of descriptive and historical notes on the University and town of Cambridge, which began in our issue of January 3rd. We desire here to acknowledge our indebtedness to Dr. F. J. Allen, honorary secretary of the Cambridge Antiquarian Society, and formerly professor of physiology in Mason's University College, Birmingham, for the very large share he has had in the preparation of the series. Dr. Allen has not only written the text of all the articles, at great cost of time and labour, but many of the beautiful photographs—for instance, those of St. Benet's Church, reproduced a fortnight ago, and the remarkable interior of the Round Church—are from his camera. The learned author has made due acknowledgement to those authorities, living and dead, whom he has consulted, and it only remains for us to thank Dr. Arnold Chaplin for his ready permission to make copies of the portraits of Harvey, Newton, and Young in his collection. We venture to believe that Dr. Allen's notes on Cambridge, representing so much knowledge and research, are not only of interest to the members of the British Medical Association and their guests who are about to visit the university town this month, but will remain of permanent value.

THE Anatomical Society of Great Britain and Ireland has arranged to hold its annual summer meeting at Cambridge on the afternoon of Friday, July 2nd, and on Saturday, July 3rd. The dates have been chosen so as not to clash with the proceedings of the Sections at the Annual Meeting of the British Medical Association. The chief subject for discussion will be the morphology and development of the central nervous system, but papers will be read also on the structure of the earliest land vertebrates, on partial transposition of the mesogastric viscera, and on avian structure as bearing upon problems of bird migration. Further particulars can be obtained from Professor Barclay-Smith, at King's College, Strand, W.C.2.

DR. THOMAS R. BROWN, one of the officers of the League of Red Cross Societies at Geneva, will attend the annual meeting of the British Medical Association as a delegate of that body.

Medical Notes in Parliament.

An Autumn Session is now held by the Government to be "inevitable," and the intention is to adjourn Parliament as near the end of July as possible.

General Medical Council Bill.

The Direct Representatives of the General Medical Council Bill, of which particulars were given in our columns of May 15th, p. 685, was read a second time in the House of Commons on June 14th, and referred to a Standing Committee.

Medicine and Mining Administration.

Our Lobby Correspondent states that the Cabinet had under serious consideration last week a proposal to establish a separate Ministry for Coal Mines. This, however, was rejected on the score of expense and in view of the general feeling against an increase of the bureaucracy. It was then decided to make a Department in the Board of Trade, and that the Bill to be submitted to Sir Robert Horne should provide for an additional Parliamentary Secretary. The intention is that this junior Minister shall deal with all the negotiations and answer for the office in the House of Commons, subject, of course, to decisions on policy by his chief and by the Cabinet. It is further proposed that the new Department shall have the assistance of an advisory council, to include not only representatives of employers and employed and of consumers, but also one or more scientists and one medical man. When the bill is printed it will be found to contain powers for the transfer to the Department of the various medical services in regard to mining which are at present dependent on the Home Office. As the Coal Control Agreement and the Coal Mines Emergency Act lapse on August 31st, legislation is necessary before the summer adjournment of Parliament if the new policy of joint administration is to be adopted.

Dangerous Drugs Bill.

On June 10th, in moving the second reading of the Dangerous Drugs Bill, the purpose of which was fully explained in an article published on May 22nd (p. 714), Major Baird said that it gave effect to the International Opium Convention signed at the Hague on January 23rd, 1912. The purpose of the Convention was to bring under control throughout the world the traffic in opium and cocaine, and the preparations derived from them, restricting their use to medical and other legitimate purposes. The Convention was signed on behalf of all the Powers represented except Turkey and Serbia. Some of the countries, including Germany, failed to ratify the Convention before the outbreak of war, and thus it was not brought into operation. During the war Great Britain found it necessary to act on her own account, owing, first, to the spread of the cocaine habit, and, secondly, to the extensive smuggling of opium carried on in the East; a regulation was made under the Defence of the Realm Act for the control of the manufacture, sale, and distribution of cocaine, and the importation of cocaine and opium was prohibited save under licence of the Secretary of State. These measures were not altogether successful; it was difficult to stop smuggling in the case of an article which could be carried in such small quantities and so easily sold as was opium. The only effective control could come from international co-operation. The Allied Powers attached so much importance to this question that the ratification of the Convention was made one of the conditions of peace: the Convention to be brought into force by legislation without delay, and in any case within twelve months of the treaty coming into force. It was doubly important to pass the bill because of the impending abrogation of the Defence of the Realm Regulations. The bill was limited to carrying out the Convention except in one respect; powers were asked to extend the provision, not only to the derivatives of morphine and cocaine, but to any other alkaloid of opium, and any other drug of any kind which was likely to produce the same injurious effects, and this was contemplated, as might be seen by Article 14 of the Convention. Another reason why the Government was anxious for the powers contained in the bill was that British representatives in China and Japan had referred repeatedly to the disastrous effect of the traffic which was being carried on with China in morphine and cocaine; both China and Japan were signatories to the Convention. Of course, a big measure of this kind affected the interests of large bodies of people at home. Representations had been made by the Pharmaceutical Society and by wholesale dealers, and it was hoped to be able to meet them.

Dr. Murray, after congratulating the Home Secretary on the part he had taken in this matter, and expressing general approval of the bill, said that very often the excuse given by people who were victims of the drug habit was that a doctor had prescribed it, and that after the immediate need for it had passed, the patient had continued the drug until he became a victim. He presumed that what was meant by one of the clauses giving power to the Home Secretary for "regulating the issue by medical practitioners of prescriptions containing any such drug, and the dispensing of any such drugs," was that a chemist who dispensed the prescription containing any of these drugs would not be allowed to dispense it without a renewed prescription from the doctor. He did not know how many times a doctor might allow it to be dispensed without the renewed authority, but there should be some limit. He wished that the Home Secretary had taken power to abolish medicated wine, as in his opinion there was nothing that produced more drinking among women than medicated wines, which were a camouflaged method of

introducing drinking habits. He hoped that any regulation as to keeping books of all drugs sent out would be framed in consultation with the representatives of the medical and pharmaceutical professions. For an offence against this Act a fine of £200 could be imposed. Many thousands of deaths occurred every year from alcoholic poisoning. Deaths also resulted indirectly from it, inasmuch as people were drowned while under the influence of alcohol. The man who sold alcoholic poison which had been the means of killing somebody went free. That was an unfair discrimination against medical men and chemists, who were liable to heavy penalties under the present bill for selling something which was used by victims of the drug habit. The question of penalty needed to be very carefully considered.

Mr. Woolcock, who said that with the exception of the member for South-West Norfolk he was the only M.P. holding a pharmaceutical certificate, raised the question how far the proposal in the bill to allow the sale of specified drugs only by licence would take away the authority given to chemists and druggists under the Poisons and Pharmacy Act. Though they were speaking loosely at the moment of opium, morphine, cocaine, ecgonine, and heroin, they were also dealing with an enormous number of substitutes. He asked for a promise that a pharmacist carrying on business as a chemist should have the right to dispense and retail substances provided for under this Act. The powers to be given to the Home Office should be used only in very serious cases, and anyone found guilty of a breach of the Act or the regulations should have the right of appeal to some court.

Captain Elliot said that the fact that such a bill was necessary was a very striking commentary on the trend of some of our legislation. In America, where they had gone in for prohibition, the drug habit had developed to an extent altogether unknown in our own country. All medical men in the House and the country would like to draw the attention of the Government to the necessity for dealing with patent medicines. Before the war a powerful committee of the House investigated the question thoroughly, and drew up a well thought out and moderate report which, by an unlucky mischance, was presented to the House on the day of the outbreak of the war. Now the war was over he begged the Home Office to confer with the Ministry of Health and introduce legislation along the lines recommended. Very great evils had arisen from people using drugs under conditions in which no medical man or chemist would dare to prescribe them. He hoped the bill was only the beginning of international work for dealing with health problems as a whole; the microbe knew no frontier.

The measure was read a second time and referred to a Standing Committee.

London Hospitals.—Sir Clement Kinloch-Cooke asked the Minister of Health on June 10th if he was aware that the National Hospital for the Paralysed and Epileptic, Queen Square, London, the principal school for the study of nervous diseases, had had to close its doors owing to want of funds, and whether, in view of the urgent public need of keeping open the hospital and the serious loss to medical science involved, the Minister could now make his promised statement with regard to Government assistance to hospitals. Dr. Addison replied: I am not yet in a position to make any general statement, but in the meantime I understand that the King Edward Hospital Fund are prepared to consider the application from this hospital for an immediate emergency grant, an application which reached them this morning, no previous intimation having been given to the Fund that there was any intention of closing the hospital.

Motor Taxation.—In reply to a question, on June 9th, Mr. Neal, Parliamentary Secretary for the Ministry of Transport, said that as the Minister could not recommend a rebate of the proposed taxation on motor vehicles in favour of medical practitioners, no concession could be made to coroners.

The Dentists Bill.—Asked, on June 9th, when legislation would be introduced to carry out the recommendations of the Select Committee on the Dentists Act, 1878, Dr. Addison said that owing to the pressure of other legislation the draft of this bill was not yet complete, and he was unable to say when it would be introduced, though he hoped it would be ready shortly. The question whether it could be carried this session would depend upon whether it was a matter of controversy.

Veterinary Surgeons.—The Veterinary Surgeons Act (1881) Amendment Bill, as amended in the Standing Committee, was read a third time in the House of Commons on June 11th. It provides that every member of the Royal College of Veterinary Surgeons shall pay an annual fee of one guinea to the College, and authorizes the College to conduct examinations, prosecutions and inquiries, and to carry out such other objects as may be considered beneficial to the veterinary profession and necessary for the promotion of the art and science of veterinary surgery. An amendment to leave out the word "prosecution" was resisted by the Parliamentary Secretary to the Ministry of Agriculture, who said that the College had given an undertaking that it did not desire to interfere with the work of unregistered persons in the performance of operations on or the treatment of animals, provided they did not represent themselves to be qualified veterinary surgeons. It was added that there was nothing in the Bill to give such power. Lieut.-Colonel F. E. Fremantle, while recognizing that the supply of qualified veterinary surgeons was defective, urged that the word "prosecution" should be retained, and the amendment was withdrawn. A clause providing that anything which would be an offence if committed by an individual shall be an offence if committed by a company registered under the Companies Act, was adopted, with the addition moved by Mr. Cautley of the words "or a society registered under the Industrial and Parliamentary Societies Act." In the course of the discussion on the motion for the third reading Captain Elliot said that there was no doubt that from the study of animal pathology much might be learned which would subsequently be of use in human pathology. The investigations into the epidemiology of foot and mouth disease might, he hoped, be of the greatest use in future investigations into influenza. The great institute at Aberdeen for the study of animal diseases had attracted very liberal support from Scottish citizens, and had drawn a professor of physiology from the University of London. Further, many diseases of herds had a bearing on the prosperity of the people. Animal pathology was practically an unexplored science; the fact, for instance, that rickets was of common occurrence amongst sheep and growing pigs showed that if diseases of animals could be investigated by men of scientific training, facts of the utmost importance to children might be discovered. Dental caries was very closely related to diet, and could be studied in animals. Mr. Cautley, speaking on behalf of the promoters, said that its principal features were to give a legal status to the College of Veterinary Surgeons whereby it could set up a teaching school, exercise disciplinary powers over its members, and reserve to these members the title of duly qualified veterinary surgeons. Certain exemptions were made in favour of holders of veterinary certificates of the Highland and Agricultural Society and of others who might be admitted on special terms.

Women and Children Employment Bill.—Major Baird, on behalf of the Home Office, obtained, on June 10th, second reading for the Women, Young Persons and Children (Employment) Bill, which is designed to give effect to an international agreement reached at the recent International Labour Conference in Washington. The operative parts are contained in the schedule, which comprises three conventions. The first fixes 14 years as the minimum age for the admission of children to industrial employment other than that in which only members of the same family are employed. The second convention deals with the night work of young persons employed in industry, and prohibits those under 18 doing night work, save in certain specified undertakings, in which the age is lowered to 16. The third convention deals with the night work of women employed in industry, prohibiting it except in certain specified cases. The definitions of industrial work are given in the schedule, but there is a reservation whereby a competent authority in each country is to settle the line of division which separates industry from commerce and agriculture. There was some little discussion on a qualifying clause in the bill, which lays down that nothing in the Act shall prevent the employment of a child lawfully so employed at present. This has been introduced to meet the case more especially of the Eastern countries, which have not yet sufficient machinery to adopt the two-shift system. Lieut.-Colonel Fremantle took strong objection to Clause II, which would enable women and young persons to be employed in shifts between 6 in the morning and 10 in the evening on any weekday other than Saturday, and said that he hoped, in the interest of public health, the Government would withdraw this clause.

Answers in Brief.

The Minister of Health hopes at an early date to lay before Parliament proposals for enabling local authorities to require the immediate utilization of unoccupied dwellings.

The estimated increased cost of giving old age pensions of 10s. weekly to all British citizens of 70 years of age in the United Kingdom, irrespective of their means, would be £15,100,000 a year.

Dr. Macnamara anticipates that, owing to the recent increase in the prices of coal and sugar, the index figure of the cost of living (food, rent, clothing, fuel, light, etc.) will show an advance of 150 per cent. as compared with the level of July, 1914. He mentioned that the figures for December 1st, 1919, showed an advance of 125 per cent., and those for May 1st an increase of 141 per cent.

Sir A. Griffith-Boscawen has stated that in the week ended March 13th, 116 cwt. (1,276 gallons) of fresh milk were received at Harwich from Denmark. There was no official information as to the hygienic conditions in which the milk is produced.

At the outbreak of war three areas had, on representations made by medical officers of health, been declared by the Local Government Board to be insanitary. They comprised 890 houses, occupied by 4,387 persons. In two cases proceedings were deferred owing to the war. A scheme in regard to one has now been submitted, and one for the second of the areas has been promised. In the third a scheme has been made and confirmed.

EIGHTY-EIGHTH ANNUAL MEETING

OF THE

British Medical Association,

CAMBRIDGE, 1920.

PICTURESQUE CAMBRIDGE.*

KING'S COLLEGE CHAPEL.

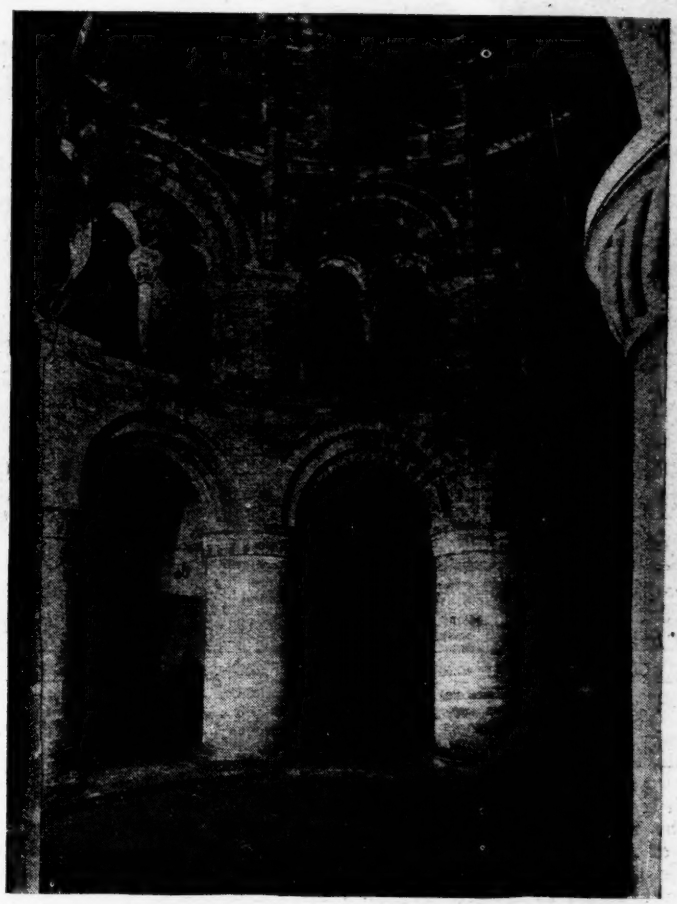
OF those who know Oxford and Cambridge, few will deny that these are the two most picturesque towns in England—that is, in the matter of man-made picturesqueness resulting from building and planting, for hundreds of towns are more picturesquely situated.

The two towns resemble each other in so far as their beauty depends on fine buildings and luxuriant gardens; but each town has its individual characteristics. Oxford gives the impression of a city, Cambridge of a rambling country town. In one's memory of the two places the stately High Street at Oxford, and the river with the College Backs at Cambridge, will probably leave the most vivid impressions.

Members attending the Cambridge meeting will naturally wish to make the best of their opportunity to see the local attractions. It has been arranged to give to each member a copy of the excellent and authoritative *Concise Guide* written by the distinguished local antiquary, J. W. Clark. Those who follow its directions will see Cambridge thoroughly; but many visitors will have only time to see a portion of it, and for those in particular, if not for all visitors, we give the following notes on the most salient features.

Cambridge is the "garden city" of England. Besides the many gardens (for nearly every college has gardens attached to it) there are nearly 300 acres of common land forming open spaces *within* the town as well as *outside* it. All these gardens and playgrounds divide the town into detachments, so that it has no density anywhere, and covers an enormous area for its population, its diameter in any direction being at least four miles.

The College Grounds are open to the public from early morning until dusk, and visitors may walk freely in them, except in those parts which are obviously reserved for private use. It is contrary to rule to take meals in the grounds, or to set up a photographic camera without permission. For obtaining such permission the porter at the main entrance will give the necessary information. As a rule no objection is made to the unobtrusive use of a hand camera.



THE ROUND CHURCH, CAMBRIDGE.

THE BACKS.

The most attractive feature of Cambridge is the "Backs." Six of the colleges—namely, Queens', King's, Clare, Trinity Hall, Trinity College and St. John's—are situated on the river bank, so that their fronts are towards the streets and their *backs* towards the river, hence the name. Their grounds occupy both sides of the river, and adjoin each other so as to form a continuous garden or park. The combination of river, flowers, trees, many bridges, and college buildings has no parallel anywhere. Visitors will be tempted to take a boat and row through the Backs, but a warning is necessary: pleasant as a row in the Backs may be, their beauty cannot be even imagined in a boat, for the high banks cut off the view on each side. To see the Backs one must walk in the College Grounds and note the view from each of the bridges, especially Garret Hostel Bridge. The so-called "Bridge of Sighs" at St. John's must be seen from St. John's Old Bridge; this is an important hint, for too many visitors cross the Bridge of Sighs and never see it. This bridge was built 1825–30 from a design by Hutchinson, partner of Rickman, the originator of the architectural terms *Early English*, *Decorated*, and *Perpendicular*. The Old Bridge at St. John's, built 1696, is attributed to Wren. These two bridges and that of Clare are the most notable of the college bridges. While in the Backs the visitor should notice the fine wrought-iron work (seventeenth and eighteenth century) of the entrance gates, of which Trinity College has one, St. John's three, and Clare three.

COLLEGE BUILDINGS.

Of the college buildings, King's Chapel will be the first to arrest attention, forming as it does the central feature of Cambridge, so situated as to be seen to full advantage either from the street, the Backs, or the surrounding country. Its dimensions are of cathedral scale, and it is a product of the most original period of English architecture, the latter half of the sixteenth century, which also produced St. George's Chapel at Windsor Castle and the towers of Merton and Magdalen Colleges, Oxford. The late Francis Bond, a leading authority on the history of architecture, described King's Chapel as "the crowning glory of English art."

Among the other features which no one should omit to see the following are the most important:

At Queens' College the cloister court, with the beautiful half-timbered house which forms the President's Lodge; also the view of the College and the Lodge from Erasmus's Walk.

At Caius College the gateways built by John Caius, especially the Gate of Honour.

The Senate House, the interior of which is rich in woodwork of the Grinling Gibbons school.

At Trinity College, the Hall, exterior and interior, and

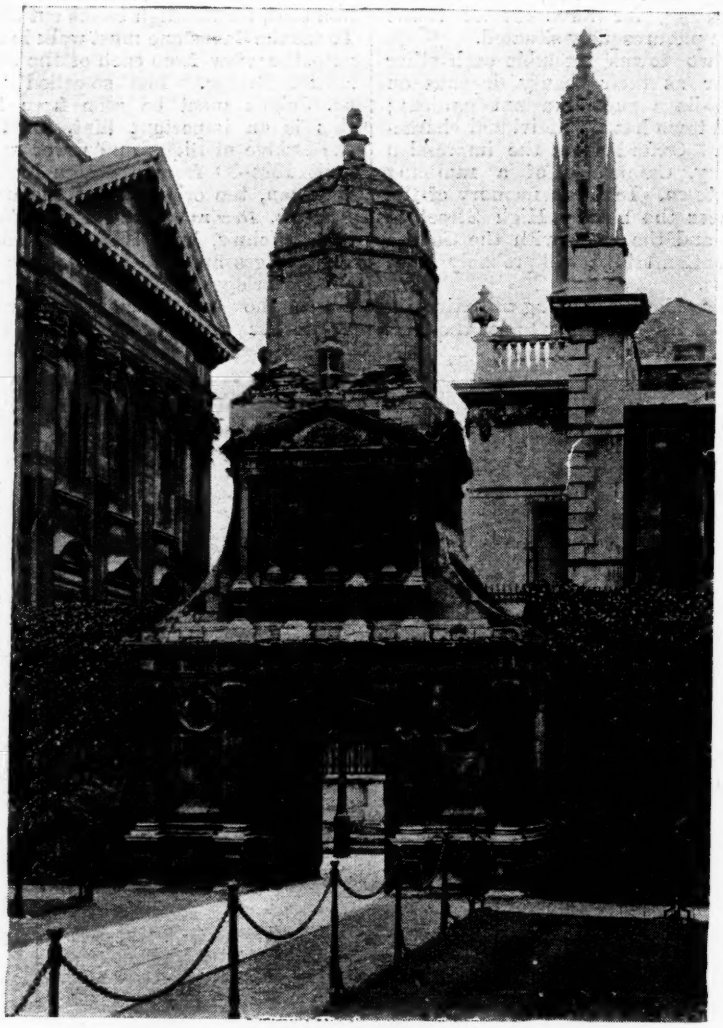
* The previous articles of this series appeared in the JOURNALS of January 3rd, January 24th, March 13th, April 10th, May 8th, and June 5th, 1920.

the Library, the interior of which is one of Wren's most successful achievements. It contains much fine carving by Gibbons. The chapel is a late building, whose chief beauty is in its woodwork, which, like that of the Library, is of the Grinling Gibbons school.

At St. John's, the street front and the interiors of the Hall, Combination Room, and Library. These are the finest mediaeval interiors in Cambridge. The Hall has a fine hammer-beam roof and oak-pannelled walls. The Combination Room was formerly the "long gallery," a feature found in several old manor-houses. It may be compared with the long gallery at Aston Hall, Birmingham, which is its contemporary and chief rival. The Library is a wonderful specimen of pseudo-Gothic work of the seventeenth century, with book-cases and roof of richly carved oak.

St. John's Chapel is about the finest work of Sir Gilbert Scott. In spite of the usual defects of modern imitative Gothic work, it is an impressive building, at least internally, and remarkable for its wealth of marble columns. It contains also some good woodwork and monuments transferred from the former chapel.

At Jesus College the Chapel, which is the oldest and, in some respects, the most beautiful chapel in Cambridge, dating from the late twelfth and early thirteenth centuries. It was the church of the nunnery of St. Radegund, the buildings of which were adapted by Bishop Alcock when he founded the college. Other remnants of the nunnery are the doorway of the Chapter House and the Refectory, now used as the Hall. The entrance gateway built by Alcock is one of the finest in Cambridge. Jesus College is farther from the centre of the town than any other college, but the beauty of its buildings makes a visit to it worth a great effort.



GATE OF HONOUR, CAIUS COLLEGE; WITH PARTS OF SENATE HOUSE, UNIVERSITY LIBRARY, AND KING'S COLLEGE CHAPEL.

At Magdalene, another of the outlying colleges, the Pepysian Library is of interest, both for its books and the beauty of the building in which they are housed

At Christ's College, which is very centrally situated, the entrance gateway should be noticed, also the Fellows' Buildings, a fine specimen of middle seventeenth century architecture.

Cambridge is notable, in contrast to Oxford, in possessing many brick buildings. They are usually beautiful in design, and present considerable variety. The best instances are St. John's College, Queens' College, Jesus College, and St. Catharine's College.

Cambridge Churches.

The older part of the town contains many churches, usually within a stone's throw of each other; but the busy visitor need only see three of them which are of peculiar interest: these are St. Benet's, the Round Church, and Great St. Mary's.

St. Benet's has a Saxon tower of unknown date, but probably about the year 1000. It is one of the best Saxon towers in England, and was doubtless still better when it had four gables and a high pyramidal roof, which have been removed. Internally the tower is supported by a Saxon arch, which is quite impressive in its massive simplicity.

The Round Church is the oldest of the four similar churches still in use in England. The walls or foundations of seven others are also in existence. These churches were built during the Crusades, as reminiscences of the Church of the Holy Sepulchre at Jerusalem. The Cambridge church dates from about 1120. It was much altered in later mediaeval times, and then restored nearly to its original form in 1841. In spite of over-restoration it is a beautiful little building. Its interior is so dark that one cannot appreciate it until the eye becomes accustomed to the gloom.

Great St. Mary's, or the University Church, has a plain exterior, but the interior, though encumbered with great galleries, is a fine and rather ornate specimen of late Perpendicular work.

The Surrounding Country.

In the immediate neighbourhood of Cambridge the prettiest scenery is at Madingley and on the upper Cam near Grantchester. Madingley is situated on the slope of a wooded hill, and has a mediaeval mansion in a beautiful park. It would be beautiful in any part of England, and may surprise those who expect to find Cambridgeshire a flat country

The Cam above Cambridge is a narrow but very pretty river, and all who can find time should have a row as far as Grantchester. Below Cambridge the river is wider. Its prettiest stretch is that by Fen Ditton, where the boat races are held. Below Ditton the river flows through a flat country, which looks its best as seen from the river. This part of the country, being highly cultivated, has none of the charm of the wild fen, except a small portion, Wicken Fen, which is reserved in its natural state, and forms a happy hunting ground for the botanist and entomologist.

A remarkable feature of the lowlands of Cambridgeshire is the great dykes constructed by the ancient inhabitants for the defence of their territories. They are more wonderful than picturesque, but will give much pleasure to the antiquarian members of the British Medical Association who join the excursion which is being arranged for visiting them.[1]

[1] The programme of excursions, etc., is printed in the SUPPLEMENT this week.

The village churches of Cambridgeshire are of much interest, and are remarkable for the prevalence of fourteenth century work, which is scarce in most other parts of England. The churches of Trumpington, Grantchester, and Cherry Hinton, all very near Cambridge, should be visited by those who are interested in architecture.

Scott and Wilkinson] Photo, Cambridge.

BOAT RACING ON THE CAM: VIEW FROM DITTON CORNER.

ELY.

It is hardly necessary to dilate on the attractions of Ely. The town is picturesquely situated on a low hill commanding the fens, and the cathedral is second to none in England for its architecture and the charm of its surroundings. The interior may justly claim to be the finest in England. The remains of accessory buildings, portions of the former abbey, add to the interest of the place. One hint concerning Ely is of great importance. The visitor arriving at the railway station should not follow the main road to the cathedral, but should take the turning to the right at the foot of the hill, and afterwards take the footpath to the left, leading across the park. If he fail to do this, he will miss the most beautiful view of the Cathedral—in fact, one of the choicest cathedral views to be found anywhere.

The Honorary Local Secretaries of the Meeting are Dr. J. F. Gaskell, The Uplands, Great Shelford, near Cambridge, and Dr. G. S. Haynes, 58, Lensfield Road, Cambridge. Communications should be addressed to them at the Medical Schools, Cambridge.

England and Wales.

MATERNITY HOMES AND HOSPITALS.

THE Minister of Health considers it desirable that he should be furnished with annual reports,[1] in respect of maternity homes and hospitals established primarily for normal confinements, showing:

1. The number of cases admitted, with their average duration of stay.
2. The number of cases delivered by midwives and doctors respectively, as well as the number of cases in which the midwife sought medical assistance for special reasons.
3. The number of cases notified as puerperal sepsis, with the results of treatment.
4. The number of cases in which the temperature rose above 100.4° for twenty four hours, with a rise of pulse rate.
5. The number of notified cases of ophthalmia neonatorum and of "inflammation of the eyes, however slight."
6. The number of infants not entirely breast-fed, with the reasons for this.
7. The number and causes of maternal deaths.
8. The number of cases of fetal stillbirths and deaths.

The authorities of these institutions are asked to keep a register with the purpose of compiling this information. Immediate information is to be sent to the Ministry of every case of maternal mortality and of notified puerperal fever.

SCHOOL MEDICAL OFFICERS' SALARIES.

At a meeting of the Devon Education Committee on June 3rd, at Exeter, the Medical Officer (Dr. Adkins) reported that Dr. C. G. Mathews, who at the last meeting was appointed to fill the vacancy for the Barnstaple district, at a commencing salary of £400 a year, rising by annual increments of £25 to £500, with £175 a year travelling expenses, had sent a telegram the day after his appointment declining to take it up (see BRITISH MEDICAL JOURNAL, May 15th, 1920, p. 686). A temporary arrangement was made whereby Dr. Scott was appointed at 10 guineas a week, with the travelling allowance. The Chairman said the question was whether the Committee would sanction the steps taken. The Medical Officer said that Dr. Mathews was appointed at a salary less than that agreed to by the British Medical Association. To the question whether when the vacancy was advertised women as well as men were invited to become candidates, he replied that he did not think either sex was mentioned. They could not expect women to go about the rural parts of Devonshire in all weathers.

Dr. Mackenzie moved that the Committee ask Dr. Scott to continue the duties at £500 a year. The Medical Officer said the minimum sanctioned by the British Medical Association was £500 a year rising to £650, while the present scale in Devon was £400 rising to £500. In regard to travelling expenses, all the medical men were out of pocket with the present allowance of £175 a year in Devonshire. He considered the scale of expenses should be £200 a year. Mr. Windeatt said it seemed to him that it was a fight between the British Medical Association and the Devon Education Committee, and that eventually the Committee would have to give way. He suggested the appointment of Dr. Scott at the increased scale, adding that when the five other district medical men applied to be treated in the same manner—as they would—the Committee should consider the possibility of working the county with a decreased number of doctors. Dr. Mackenzie said it was quite impossible for a man and his wife and family to live and keep up the position required on such a salary as £400 a year. The Medical Officer pointed out that it was not the British Medical Association alone which had intervened in this salary trouble; the Committee had also received communications on the subject from the Ministry of Health, which it had allowed to lie on the table. Dr. Mackenzie said the Committee was not standing by the Medical Officer, but was trying to get him an incapable staff and adding to his other worries. Mr. Stevens urged that the Committee should stand firm and refuse to be dictated to. Mr. Young expressed the view that if "the unions" were to dictate as to what was to be done an Education Committee was a mere sham. It was no use discussing and deciding matters when it was left to their masters to declare what should be done. The proposal was eventually adopted to pay Dr. Scott the same salary as the other district medical officers were receiving. The Medical Officer remarked that that was no good, because it would not be accepted.

PRESENTATION TO DR. BRACKENBURY.

At the monthly meeting of the Middlesex Panel Committee on June 10th Dr. Brackenbury, who has been chairman of the Committee since its inception in 1914, was presented by the members with a silver coffee-pot and sugar-bowl and cream-jug. Before the presentation Drs. Ingram, Cohen, and Shanks commended the skill, diligence, and wisdom Dr. Brackenbury had always displayed in the discharge of his office. The presentation was made by Dr. C. F. T. Scott, Vice-Chairman of the Committee, in a felicitous speech. He attributed the success of the Committee to the able chairmanship of Dr. Brackenbury,

[1] Memo. 19/M.C.W., Ministry of Health, May, 1920.

and dwelt upon Dr. Brackenbury's service to the whole profession, describing him as an example of true statesmanship. History would record that he had obtained an assured place in the esteem of the profession. Dr. Brackenbury, who was enthusiastically received, in expressing his thanks said that in all his work for the profession he had been governed by a single desire to serve the best interests of his fellow insurance practitioners and to promote the public welfare. In so doing he had not only satisfied his sense of duty but had won a great deal of pleasure. Reference was made in the course of the proceedings to the fact that Dr. Brackenbury has been chosen as Liberal candidate for East Walthamstow.

"Safety First."

A lecture given by Mr. Gerald Bellhouse, C.B.E., His Majesty's Deputy Chief Inspector of Factories, has been printed by the Manchester University Press. Mr. Bellhouse quotes Home Office figures, which show that 1,384 fatal accidents occurred during 1919; 40,056 accidents were due to machinery and 84,582 to other causes. These figures are slightly lower than usual; accidents which kept the worker away from his work less than one day were not included in the case of machinery accidents or less than seven days in the case of non-machinery accidents. It is calculated that, however well machinery is guarded, not more than a 10 per cent. reduction by this means of the accident rate can be expected; this corresponds very closely with American estimates. Mr. Bellhouse believes that a very large diminution of accidents arising in the course of industrial employment may be expected to follow the organization of a "safety first" movement, such as has been promoted in America during the last six years by a voluntary co-operative association of employers and others. In a steel factory at St. Louis, employing 2,500 men, the number injured was reduced from 769 in 1916, to 124 in 1918; a similar reduction of 60 per cent. was recorded in mines, machine shops, and factories. In one large soap works in England a safety inspector was appointed three years ago, and accidents have been reduced by 60 per cent.; this was accomplished in a works where safety had long been studied, and where the accident rate was already very low. Mr. Bellhouse believes that if success is to be attained by a "safety" organization, five things are essential: (1) Efficient organization in the staff, beginning at the top; the employer or manager must be a thorough believer in "safety first"; (2) the appointment of a part or whole-time safety inspector; (3) willing co-operation of the foremen; (4) a safety committee, with representatives of the management and the workers, meeting regularly at frequent intervals; (5) pictures and stories which show what the workman can do to protect himself should be posted on a "bulletin board." Mr. Bellhouse also recognizes that the accident rate is influenced by lighting, temperature, speed of production and fatigue of the workers, and makes allusion to the inquiry conducted by Dr. Vernon on behalf of the Health of Munition Workers' Committee.[1]

Scotland.

Small-pox in Scotland.

Cases of small-pox continue to occur almost daily in Glasgow, but the number of patients under treatment in the Belvidere Hospital had fallen to 125 on June 11th. Dr. Maxwell Williamson, M.O.H., reports that the public in Edinburgh is responding well to the offer of free vaccination and that between 40,000 and 50,000 persons had been vaccinated recently, including the heads of families formerly conscientious objectors. A beginning had, he said, been made with vaccination at the schools, and it was expected that 500 pupils would, with their parents' written consent, be vaccinated daily.

Highlands and Islands Medical Service.

The Highlands and Islands Subcommittee met representatives of the Board of Health on June 10th, and discussed with them the representations put forward by the former for improvements in conditions of service of practitioners serving under the Highlands and Islands scheme. The points dealt with included the following:

(1) Increase of the guaranteed net income in single practice areas.
(2) Increase of the present mileage rate.
(3) Increase in the scale of maximum fees payable by patients.
(4) Special fees for special services.
(5) Provision of locumtenents; and
(6) A pension scheme.

With regard to (1), it was intimated that the Board is in sympathetic agreement with the request for an increase on the original minimum of £300 net, and that advances have actually been made within the limit of the present grant, but that further increases are subject to Treasury sanction, and exceptions may have to be made in the case of small communities which, under no circumstances, could require the full-time services of a doctor. Considerable discussion took place on (2), and the representatives of the Board intimated that they were not in a position to give a final answer, but they accepted the principle that a revision of the terms should be made in the light of the altered conditions of Lowlands insurance service, and that the payment should include an allowance for time as well as cost of travel. On (3) doubts were expressed as to the effect of any substantial increase in the direction of restricting the usefulness of the service, and the subcommittee contended that patients themselves frequently expressed surprise at the smallness of the fee charged, and pressed for increase, especially in the midwifery fee. On (4) it was agreed that the question should be examined in the light of the scales fixed in the various distribution schemes under the new Medical Benefit Regulations. With regard to the question of locumtenents (5), it was intimated that arrangements were being made, and that twenty-two doctors in single practice areas had been offered relief this year. The question of further provision was dependent on the available supply of locumtenents. The Board is not prepared at the present stage to consider a pensions scheme.

Hospital and Nursing Services.

A report by the Scottish Insurance Commission on Hospital and Nursing Services has been presented to Parliament. The report is based upon inquiries made in 1917, and is therefore somewhat out of date. It points out that specialist skill and large general and special hospitals are disposed asymmetrically to the less thickly populated areas dependent upon them. Inaccessibility is the problem of the Highlands and Islands, and in a less degree of the southern uplands. In the former simple treatment, involving little more than appropriate surroundings and nursing care, is often inaccessible, though the institutions providing it are in many cases more than adequate to the calls upon them. The lack of accommodation in voluntary hospitals is mainly on the surgical side, but it extends also to convalescent treatment, neurasthenia, paralysis, epilepsy, chronic affections of the heart and lungs, and incurable diseases generally. No convincing evidence is found that the flow of income to voluntary hospitals has diminished, but it does not grow and the war has aggravated normal difficulties. The fact that the large general and special hospitals work independently of the others and of the rural hospitals is noted, and the opinion expressed that some arrangement might be devised for the classification and admission of patients in order of urgency, taking each large centre with its dependent area as a unit. The fact that the State has made itself responsible for the treatment of pensioners is considered to make possible the growth of a demand for State subventions for others. With regard to nurses, it is said that a revision of the nursing service must be undertaken, but the report does not suggest how this should be carried out.

Ireland.

Presentation to Dr. Stanley B. Coates.

The retirement of Dr. Stanley B. Coates from the Belfast Dispensary Medical Service, with which he has been associated for forty-two years, was the occasion of the

[1] Cmd. 9046, 1918, or see this JOURNAL, May 18th, 1918, p. 569.

gathering together on May 19th of a large number of his professional brethren. Dr. H. S. Osborne, senior medical officer of the Belfast Union district, who presided, recalled his long association and friendship with Dr. Coates, and dwelt specially upon the kindly interest that Dr. Coates had always shown in the welfare of his brother medical officers; he alluded also to Dr. Coates's long-continued efforts on their behalf and on that of the profession in Ireland in his capacity as representative on the Council of the Irish Medical Association. On behalf of his late colleagues in the Dispensary Medical Service a silver rose bowl of Celtic design, suitably inscribed, was then presented to Dr. Coates. In making the presentation Dr. C. J. Milligan expressed the hope that both Dr. and Mrs. Coates would have a long life of further happiness and continued good health. Dr. Coates replied in suitable terms, and added a few words of advice regarding the prospects of the profession in the future. Complimentary speeches followed from Dr. William Burns, Dr. Irvine, Dr. Munn, and Dr. Longbridge.

PRESENTATION TO DR. JAMES TAYLOR OF TANDRAGEE, ARMAGH.

A presentation was made recently to Dr. James Taylor, J.P., M.O.H. Tandragee Urban and Rural Districts and M.O. to Dispensary Districts. It consisted of an illuminated album containing an address from some two hundred friends and patients in Tandragee and surrounding districts, with facsimiles of their signatures, and a wallet of notes. The address referred in terms of great respect and affection to Dr. Taylor's long service of forty-five years and expressed high appreciation of his personal and professional qualities. The album is bound in blue leather, with Italian ornament, and little water-colour views of the neighbourhood and places in the North of Ireland, painted by the doctor himself, are inlet into the illuminated border. The whole forms a rare and beautiful work of art, and a souvenir to one who has spent his life in the service of his fellows. The profession joins in hearty wishes for many years of further activity and much happiness to one of their most honoured brethren in the North of Ireland.

India.

RECRUITING FOR THE INDIAN MEDICAL SERVICE.

THE Secretary of State for India announced last August that 204 medical men were urgently required to fill vacancies in the Indian Medical Service, and it was added that of these two-thirds (136) would be Europeans and the remainder Indians. The appointment of European candidates is to be made by nomination, on the recommendation of a selection committee in England. The Director-General I.M.S. in a recent speech to the Legislative Council said that there was a proposal, in order to facilitate the entry of Indians, to give scholarships or nominations to the most promising Indian medical students who wished to enter the Service. In the former case they would proceed to England to complete their curriculum, and then compete for the Indian Medical Service; in the latter case they would proceed to England only for a further course of instruction. The Indian Medical Service, he said, had been a great asset to India in the past, and had attracted the best intellects from the British medical schools; it would now, he hoped, attract the best from the schools of India as well. Until recent years the Indian Medical Service had never contained more than 7 per cent. of Indians. A Board of Selection has been appointed in India for the recruitment of permanent officers for the I.M.S. in the manner indicated above. The Board consists of the Director-General I.M.S. (president), the Director of Medical Services in India, and an Indian officer I.M.S.; Colonel Sir H. E. Banatvala, C.S.I., is acting in that capacity. Candidates who may be summoned by the board for interview will, if considered suitable for appointment, be placed in one of two classes—first, those who received their medical education chiefly in England; and secondly, those who do not come within this category. The final recommendation as to the former will be made by the Selection Board in England, while the recommendations as to the latter will be sent direct from India to the Secretary of State, who will make appointments to fill the vacancies. The Selection Committee in England, in addition to considering applications from India of candidates who have mainly received their education in England, will review those of the candidates in the United Kingdom, but not the recommendations of the Indian Committee in regard to candidates educated in that country.

MEDICAL INSPECTION BY WOMEN.

The first appointment from among the members of the Women's Medical Service of an assistant to the Inspector-General of Civil Hospitals was made in the Punjab in 1914; a similar appointment was made in the United Provinces in 1918. The regular inspection of women's medical institutions by a woman provincial officer is an advantage both to the Government that aids them and to the institutions and staffs concerned. The medical woman inspector is able to organize schemes for maternity relief, and to bring the urgent need for these and other measures to the notice of the inspector-general.

PLAGUE IN THE UNITED PROVINCES DURING 1918–19.

It appears from the annual report of Colonel C. Mactaggart, I.M.S., Inspector-General of Civil Hospitals in the United Provinces, that in the year ending June 30th, 1919, the number of deaths from plague—namely, 17,633—was less than in any previous year since 1903, with the exception of 1908–9, when the number recorded was 14,252. In cities with more than 50,000 inhabitants there were only 21 deaths. The total number of deaths in 1917–18 was 206,190. The mildness of the epidemic of 1918–19 is attributed partly to the existence of "conditions approaching famine," with consequent depletion of the rat population; and partly to the failure of the rains, with decreased atmospheric humidity and consequent diminution in the number of rat fleas. Systematic rat destruction was confined to the district of Azamgarh, where 38,000 rats were killed by a gang of coolies acting under medical supervision. During the severe epidemic of the previous year it was noticed that towns where organized rat destruction had been carried out enjoyed a comparative immunity from plague. Forty thousand protective inoculations were performed, as compared with 140,000 during 1917–18; experience proved that inoculation was only accepted by the people in the actual presence of plague. In one village of a thousand inhabitants in the Mirzapur district half were inoculated and half not; there were no deaths among the former group, but forty-five among the latter. The eighty-seven permanent and twenty-three temporary travelling dispensaries, which had been in use during the previous year, were maintained; they proved a most effective agency for dealing with outbreaks of epidemic disease and have come to be regarded as established institutions in these provinces. Their staff was able to treat 1,200,000 patients and to perform 23,000 operations; through them a large amount of literature dealing with the prevention of epidemic diseases was distributed. It is proposed to use travelling dispensaries in epidemics not only of plague but also of influenza and other diseases. The plague staff consisted of the chief officer (Mr. B. N. Vyas, Rai Bahadur, M.B.), a temporary staff of ten special health officers, the subassistant surgeon in charge of the central plague godown, and the travelling dispensaries.

IN connexion with the Baby Week celebration, conferences of the National Association for the Prevention of Infant Mortality and the Baby Week Council will be held at Leeds on June 30th, at Manchester on July 1st, at Brighton on July 2nd, at Bradford on July 6th, at Wrexham on July 7th, and at Crewe on September 10th. Among the subjects to be discussed are "The care of young children in the home as compared with their care in institutions," "Infant welfare work," and "The decay of parenthood and its menace to the race." After the morning and afternoon sessions a public meeting will be held (in most of the towns) in the evening. The Ministry of Health has sanctioned reasonable expenditure by local authorities in sending delegates to these conferences; the attendance is also invited of delegates of voluntary organizations and of members of the public who are interested in the subjects under discussion. Application for tickets may be addressed to Miss Halford, 4 and 5, Tavistock Square, W.C.1.

Correspondence.

THE TREATMENT OF CANCER OF THE CERVIX UTERI.

SIR,—It is a matter of regret to me that I was unable to be present to hear the interesting communication of Dr. Fletcher Shaw and Dr. Burrows to which you refer in an article in your issue of June 12th.

We are all anxious to learn anything that will help to make cancer of the cervix more curable and more easy to extirpate. At the Liverpool Royal Infirmary we have been fortunate to have a certain amount of radium for some years. At first we applied the tubes to many inoperable cases; but whether our technique was incorrect (we have no facilities for emanations, but have two platinum tubes containing 50 and 30 mg. respectively of radium bromide) or there was some other unknown cause, the results were not satisfactory. I therefore abandoned preliminary applications and, instead, adopted the method of performing a radical operation—the so-called Wertheim technique—in a large majority of all cases (with, as was inevitable in such circumstances, a somewhat large primary mortality) and of laying a container of radium encased in fine rubber tubing on either side of the pelvis at the end of the operation. These tubes are now withdrawn through the vagina at the end of twenty-four hours, for sloughing occurred in several cases when the radium had been left undisturbed for forty-eight hours. I have hoped by this means to destroy cancer cells which might be hidden in the lymphatics and left behind, for it seemed probable that after a radical operation the radium would have the best chance of dealing with outlying cancer cells that might have been left in the tissues. The first time this procedure was carried out was on August 6th, 1916, in a case in which the disease was very advanced. This patient was seen a short while ago, when she was quite well and had put on much flesh. Since this date many other cases have been treated in the same way with, I believe, an improvement in the end-results.

Possibly preliminary emanations followed by operation seven days later with the insertion of radium in the pelvis at the end of the operation may be found to give better results than by either method alone.

There is one more point in the treatment of these patients by which I set considerable store. It is well known, since the work of Benjamin Moore and others in the University of Liverpool, that in all cases of cancer, wherever the disease is situated, the acid secretion of the stomach is absent or deficient. I consider it necessary, therefore, that all patients, after a radical operation for cancer, should take dilute hydrochloric acid three times a day for the rest of their lives. I have been able to demonstrate that in so long a period as ten years after operation hydrochloric acid has still been absent from the stomach.

Until, if ever, we have a specific cure for cancer I think that we should utilize in every case all measures which offer a prospect of benefit in this terrible disease.—I am, etc.,

Liverpool, June 13th. W. BLAIR BELL.

EXPERIMENTAL INDUCTION OF CANCER.

SIR,—Very interesting indeed and of far-reaching import are the researches of Fibiger on the experimental production of cancer as reported in your issues of May 15th and June 5th. How far these researches will throw light on the origin of cancer the future alone can decide, but it seems to me that they may lend themselves to solving some crucial and much debated points as to the true origin of the cancer cell.

One very important stepping stone in our knowledge of cancer would be reached if we could definitely answer the question: "Can the highly specialized epithelial cell, wherever situated, alone and unaided, be stimulated by a toxin to a state of increased cell division as part of a purely inflammatory process, and then without any qualitative change in the process become cancerous; or does the toxin, by stimulating the reproductive power of the cell beyond endurance, exhaust its energy of cell division and so bring about a state whereby a positive chemiotaxis (a disguised surface energy phenomenon) for original undifferentiated germinal idioplasm is set up, and that it is the union of these two distinct cytological elements that constitutes the cancer cell?" Undifferentiated germ plasm, which, according to Weismann, is alone supposed to possess potential immortality, is located in the sexual organs—that is, ovary or testis—and is the basic tissue out of which the germ or sperm cells are eventually developed.

Now that the experimental production of cancer is practicable, no doubt the investigation will be taken up in this country, and I would suggest as a crucial experiment to settle this important point some such experiment as the following: Young male rats of a susceptible strain might be fed on the larvae of the *Spiroptera neoplastica*, and an equal number of the same subjected to the same feeding after extirpation of the sexual organs, assuming, of course, that efficient castration is a practical operation. A comparison of the results might determine whether the specialized somatic cell is of itself capable of becoming malignant or not—a point of very great importance; at the same time it might sweep from the lumber room of science some well-worn theories connected with Weismann and his germ plasm.—I am, etc.,

F. B. SKERRETT, M.B., B.Sc.Lond.

London, E., June 11th.

FUTURE PROVISION OF MEDICAL SERVICES.

SIR,—I have been waiting for the last two weeks in the hope that some general practitioner would initiate a correspondence expressing his views on the Report of the Medical Consultative Council. The proposals are so very important and far-reaching that the opinions of all sides of the profession should be sought for and discussed. I have no doubt, however, that the proposed scheme appears to members of the profession so gigantic and all-embracing that they have not yet had time to study and digest it. In the meantime I may be allowed to offer a few comments on some of the points included in the Report, but before doing so it may be said at once that to the ordinary man in the street it appears that the proposed scheme, owing to its vastness and the consequent expense involved, will court destruction if action is persevered in at the present time or the near future.

The Report is based on the assumption that all its provisions are necessary and vital to the public. It is assuming that all, or nearly all, the ailments and diseases of the well-to-do, the working man, and the poor require the attention of the elaborate primary and secondary centres for their treatment. Is that so? I should estimate that something like 80 to 95 per cent. of the illnesses occurring among the public are amply and carefully attended to by general practitioners, and that at most 20 per cent. of the public need the services of consultants and specialists over and above.

If that estimate is near the truth, why should the country be burdened with the enormous expense of the centres for the few? Surely some means could be devised and adopted of a less expensive nature to meet the needs of that part of the public who require, and rightly so, the advantages which are supplied by *x* rays, baths, massage, electricity, physical culture, etc., of the primary centres, and consultations in medical, surgical, and special cases at the secondary centres. The difficulty might be solved by merging the proposed primary centres, which are unnecessary, in the secondary centres, which could be called consultation centres. Such a method would reduce their number and avoid the multiplication of buildings and staffs, which appears to be inevitable under the scheme of the Council.

Personally I endorse the general principle laid down in the Report, that medical treatment must be both individual and communal—communal treatment being restricted to pre-natal and maternity care, child welfare, school children inspection, dental treatment, and the like; but I do not agree with the proposal to establish at primary centres common consulting rooms for the public, irrespective of their status. Besides, a very large percentage of the public would never consent to such a method of treatment. The primary centre, as shadowed forth by the Consultative Council, may be the ideal one, but human nature being as it is, it is impracticable.

I also heartily approve of domiciliary nursing being available for all illnesses when the doctor deems it necessary. I am sure that every doctor would welcome such assistance—a whole-time nurse when the mother is

ill, and a part-time service to assist and guide the mother when other members of the family are laid aside.

Regarding consultations supplied by the secondary centres, I am afraid that as soon as it is realized that any one can demand a consultation in comparatively ordinary illnesses, the relations between the doctor and the patient would be considerably strained, and I can fancy the feelings and thoughts of the consultant in such cases.

It is to be noted that while consultants would be paid on a part-time basis, with extra fees for special visits, no provision is made for the payment of general practitioners.

"The standard rate of payment at a primary centre would include residence, food, and nursing, but not medical attendance. At the secondary centre the charge would include medical attendance and would be defrayed by moneys allotted to such services. It is suggested that the charges for medical attendance would usually be met by some method of insurance."

There is nothing definite, and the procedure is quite in keeping with that adopted under the Insurance Act.

It is cheering to notice that the Consultative Council is decidedly against the establishment of a salaried State medical service, for good reasons.—I am, etc.,

Edinburgh, June 13th. MICHAEL DEWAR.

THE TREATMENT OF MENTAL DISORDER.

SIR,—In the Report of the Medical Consultative Council for England (BRITISH MEDICAL JOURNAL, May 29th, 1920, p. 741) it is stated, among other proposals bearing on the future provision of medical services for the whole country, that certain institutional services should be correlated with both primary and secondary health centres—for example, sanatoriums for tuberculosis, convalescent centres, hospitals for curable and incurable mental diseases, institutions for the feeble-minded, for epileptics, etc. May I call attention to a wording which seems to me to be both misleading and unscientific—namely, the classification of mental illness into "curable and incurable"? In the department of mental instability, more, perhaps, than in any other branch of medicine, such a distinction seems inadmissible. The curability of much mental disorder is dependent upon the circumstances surrounding the patient and the nature of the treatment applied, to a degree which is scarcely equalled in any other class of illness. Moreover, the recent advances in therapeutic science seem to make it quite possible that within the lifetime of one generation the "incurable" of to-day may become the "curable" of to-morrow.

Are not the really practical terms for the classification of the various forms of mental illness to divide them into those which require restraint and those for which it is unnecessary, or in which it may even act as an irritant—namely, into the "certifiable" and the "uncertifiable"? For both it is our privilege to provide every possible remedial condition.

Looked at from the institutional point of view, the former belong to the province of the Lunacy Board, and for them our asylums are provided, while for the latter chiefest among remedial agents is an atmosphere of encouragement, reassurance, and hope. This is best given by keeping them absolutely separate from the certifiable lunatic. For such there ought to be hospitals or homes of recovery which they can enter of their own free will, with a full certainty that these are in no way connected with lunacy regulations; and the more definitely they are separate from these the more likely are patients to be willing to come to be treated while their troubles are really curable. In the most excellent *Outline of Preventive Medicine*, issued by Sir George Newman on behalf of the Health Ministry, the greatest stress is laid upon the preventability of illness if treated in natural and appropriate fashion. And this applies *par excellence* to mental cases.

More especially is it desirable that homes of a cheerful nature, with occupational facilities, should be found for the large numbers of invalided soldiers whose nerves have been temporarily unstrung through the severity and stress of war. Most of these, given a fair chance, make short and complete recoveries, and ought not to have their futures clouded by the stigma of having been placed, as they so often are, in institutions connected with certifiable lunacy.—I am, etc.,

London, S.W.1, June 13th. HELEN WEBB.

VACCINAL CONDITION OF SMALL-POX CARRIERS.

SIR,—In your issue for May 29th, under "Medical Notes in Parliament," you report Dr. Addison's reply to a question by Mr. R. Young as to the vaccinal condition of the various small-pox "carriers" in England and Wales during 1919, and this aspect of the vaccination question has hitherto scarcely received adequate attention. The vaccinal condition of the unfortunate persons who contract small-pox in any outbreak is usually reported, but too often but little attention is paid or drawn to the vaccinal condition of the person ("carrier") who is responsible for the outbreak. Yet I venture to assert that this is a very important matter. It will be found that in the vast majority of outbreaks which have occurred in modern times the individual "carrier" responsible for originating an outbreak has been an unrecognized or overlooked case occurring in a vaccinated subject. Moreover, the usual experience is that the "carrier" case has been overlooked because it was of a very mild and modified type. Frequently the case has had but little eruption, and that of a character differing greatly from that usually seen in unmodified small-pox.

The important point I wish to emphasize is that these highly modified easily overlooked "carrier" cases almost invariably occur in vaccinated persons—not recently vaccinated, but vaccinated many years before—and because they had been so vaccinated. When this fact is more generally appreciated than it is at present I think it will be realized that our present system of infantile vaccination which is not followed by systematic revaccination is to a not inconsiderable extent responsible for the spread of small-pox. This may seem a revolutionary suggestion to some, but I submit that if we are to arrive at a just appreciation of the precise advantages to the community of our present system of vaccination we must take the consideration I have referred to into our reckoning.—I am, etc.,

Leicester, June 10th. C. KILLICK MILLARD.

"A PLEA FOR THE TONSILS."

SIR,—Under this heading the BRITISH MEDICAL JOURNAL (November 1st, 1919, p. 562) reviewed Professor Digby's *Immunity in Health*, and therein confused lymphoid tissue with vestiges. The review has brought from Professor Berry (February 7th, 1920, p. 199) his oft repeated claim that he has discovered that lymphoid tissue did compel the evolution of the vermiform appendix. We are thus confronted with comparisons between the throat and the appendix, an attempt to hide the vestigial nature of the latter, and an endeavour to confer on lymphoid cells a power they do not possess.

Because the throat is in full functional activity surgery is so restricted in its treatment of its associated lymph structures that no surgeon has yet advocated its amputation for tonsillitis, and because the appendix has lost its caecal function the treatment of inflammation of its lymphoid tissues is obliteration. It is as reasonable to think that the tonsils evolved the throat as that lymphoid tissue evolved the appendix, and if thought be permitted on this plan it may be assumed that the red cells of blood coursing through the scapula evolved those vestiges of the coracoid bone—the coraccid processes—for it is certain that the function of lymphoid tissue is as distinct from that of the caecum as the red blood cell from bone.

A plea for the tonsils is based on the service that lymphoid cells render the human organism. Such cells are globular, and the shape they form in mass is that of a ball, except when the shape of the mass is altered by the pressure of other tissues. As amphibians have lymph hearts, and as the human spleen contains muscular tissue, it may be conceded that lymphoid tissue has the power of calling muscular tissue into being, in the same way heart muscle may be evolved to serve the blood. This assumption does not, however, permit us to think that the muscular coats of the gut have been evolved as lymph pumps. Such must be the case if Professor Berry's theory be true.

The implied plea for the appendix rests on the conservation of follicular glands—lymphoid tissue. Professor Berry tells us that "lymphoid tissue is the characteristic feature of the caecal apex." This erroneous statement arose from the rabbit and hare having an enormous collection of lymphoid tissue at the ends of their caeca, and to Sir Richard Owen writing of "the slender termination of the

hare's caecum, which is glandular like the vermiform appendix of man." Whilst much has been made of lymphoid tissue at the end of the rabbit's caecum, the corresponding mass that it contains about the ileo-caecal valve has been ignored and nothing has been said about the comparative absence of lymphoid tissue at the caecal apex of the rat. Right through the mammals—and it applies with equal force to the primates—lymphoid tissue is not the characteristic feature of the caecal apex. Its relationship to that place is casual. The only animal outside the primates that has a vermiform appendix is the marsupial wombat, and its vestige of its ancestral caecum is singularly free from lymphoid tissue. To describe the fully functioning caecum of the rabbit as possessing a vermiform appendix is to deny both form and function.

Professor Berry tells us "as the vertebrate scale is ascended this lymphoid tissue tends to be collected into a specially differentiated portion of the intestinal canal—the vermiform appendix." As the amount of lymphoid tissue in the rabbit's caecal apex is a thousand-fold greater than that in the human or any other vermiform appendix, it is necessary to put the pestiferous and all too prolific rabbit at the top of the vertebrate scale, as he draws it.

To convince one of the vestigial nature of the vermiform appendix it is only necessary to study Treves's four types of human caecum, and to follow the history of man's food. The process is so simple that by the aid of rubber bags and some rubber bands the recession of the caecum can be demonstrated. Few men have had the opportunity as I have had at the courtesy of Mr. Le Souef, director of the Melbourne Zoo, of examining all the dead from a large collection of animals to determine their caecal structure. In this work I became fascinated with the meaning of splits and bands in the digestive tract, and there can be no doubt that in the external muscular coat of the vermiform appendix its history is plain. The vermiform appendix is nothing but a vestige of a large ancestral caecum, and its contained lymphoid tissue in no way affects its vestigial nature.

Professor Berry, after denying that the appendix is a vestige, claims it as a specialized part of the alimentary canal. If this be conceded, we must say that Scarpa's triangle was specially evolved to accommodate lymph glands, that the ileum was evolved for Peyer's patch, that the parotid salivary gland was evolved to contain its lymph gland, and the vertebrae exist to support the thoracic duct. No argument can do away with the fact that the vermiform appendix is typical gut, and until its structure can be denied the lymphoid theory must remain a theory which cannot be permitted to modify surgical practice.—I am, etc.,

WALTER STAPLEY, M.D., D.V.Sc., M.R.C.V.S.

Cambridge, N.Z., May 4th.

Obituary.

DAVID BERRY HART, M.D., F.R.C.P.EDIN., Edinburgh.

BRITISH obstetrics and gynaecology would surely have been impoverished had David Berry Hart turned, as he might well have done, to anatomy or to surgery at his graduation as M.B. and C.M. in 1877; but the attention of the late Sir Alexander Simpson was directed to the promising young doctor, and secured him for midwifery by appointing him to be his assistant in that department in the University of Edinburgh, so giving him the opportunity for doing the life work which he so brilliantly accomplished. He carried over into obstetrics and gynaecology the exactness of the anatomist, and in 1880 gained with the M.D. degree a gold medal and the Syme Surgical Fellowship for his thesis on "The structural anatomy of the female pelvic floor." Later in life he added to his anatomical bent the scientifically directed curiosity of the biologist, and explored the early beginnings of vital activity in the ovum and embryo.

Dr. Berry Hart's death took place at his home in Edinburgh on June 10th almost at the very hour when the Library Committee, of which he was convener, was meeting in the Royal College of Physicians. During the winter months he suffered from influenza, and to the sequelae of that disease he attributed the weakness which forced him to cease his lectures at Surgeons' Hall on May 24th. It was anticipated that a few days' rest would enable him to resume his greatly loved teaching, but signs of more serious trouble became manifest to his doctors, and he passed away in his sixty-ninth year. He was born in Edinburgh, and from his maternal grandfather, Mr. David Berry, builder, came the part of his name which was to distinguish it from others who bore the Hart cognomen.

Dr. Berry Hart received his medical education at the University of Edinburgh between the years 1872 and 1877, displaying then the same originality of thought and enthusiasm of application which marked him in later life. He visited Vienna soon after graduation in 1877, and then settled down to the work of teaching midwifery tutorially in Edinburgh in connexion with Professor Simpson's classes. He was appointed assistant physician to the Royal Maternity Hospital in 1884, and assistant gynaecologist to the Royal Infirmary in 1886, moving on to the senior posts in these two institutions in 1889 and 1901 respectively. In the early nineties he also acted as gynaecologist to Leith Hospital. At the time of his death he was consultant to all these three hospitals. In 1883 Dr. Hart commenced systematic lecturing in the School of Medicine of the Royal Colleges, and gave courses of lectures on midwifery and gynaecology there till within a few weeks of the end. He also collected a large museum of specimens, and gave to their investigation and preservation many hours of his already full life. He was all the while teaching clinically in the various hospitals, was engaged first in a general and later in a specialist practice, and was preparing and publishing many important books and papers. From outside Edinburgh recognition came to him, and he was made an honorary Fellow of the American Gynaecological Society, of the Berlin Obstetrical Society, and a Corresponding Fellow of the Leipzig Obstetrical Society. He opened a debate on placenta praevia at Brussels at the international medical meeting there, and on several occasions he was similarly honoured at the annual gatherings of the British Medical Association. He was secretary of the Edinburgh Obstetrical Society from 1879 to 1883, and became president in 1890. He was examiner in midwifery in the universities of Edinburgh, Oxford, Birmingham, and Liverpool; and he held other appointments of honour and responsibility, such as that of librarian to the Royal College of Physicians of Edinburgh.

Whilst this was the setting, so to say, of Berry Hart's life, there were three directions in which his activities were particularly fruitful—in scientific research, in medical literature, and in teaching; in each of these he revealed the note of distinction and showed the hand of a master. The clinical side of his life was far from featureless; indeed, he performed for the first time in Scotland successfully the operations of Caesarean section for ruptured tubal gestation, and for advanced broad ligament pregnancy; but he was at heart an anatomist, a research scholar, and an inspiring teacher rather than a full-time clinician.

With regard to scientific research, Berry Hart was the first in Scotland to employ the method of frozen sections in anatomical studies, and by this means to throw a flood of light upon the structure of the female pelvic floor and its behaviour in labour, in prolapsus uteri ("sacro-pubic hernia"), in the genu-pectoral position, and during the passage of the Sims speculum. A by-product of Hart's work, although carried out by other hands, was the development of cystoscopy in its modern form. Further, those who in Edinburgh followed him in the Midwifery Department applied, always with fruitful results, the frozen sectional method to the investigation of the anatomy of labour, of the fetus and new-born infant, and of the puerperium; he himself carried it into the study of ectopic pregnancy.

These, however, by no means exhausted the range and scope of Hart's researches; they were, in very truth, only the beginnings. He dealt in turn, and always originally and suggestively, with the mechanism of labour, with the mode of separation of the placenta in the third stage, with the nomenclature of transverse presentations and positions, with the tuberose fleshy mole, with the morphology and development of the genito-urinary tract, with hermaphrodism, with the theory of enzygotic twins, and with the kyphotic pelvis. To prove their worth it may be noted that hardly one of these pieces of research failed to arouse

discussion, and some of them excited so much controversy as to give birth to several other researches by Hart himself and by his antagonists. In his later work Dr. Berry Hart roamed almost solitarily (so far as obstetricians were concerned) in the mazes of Mendelism, a subject which, especially in its mathematical aspects, had a strange fascination for him. To explain the various forms of hermaphrodism, to introduce an entirely novel nomenclature, to prove that after all the "free-martin" was not a cow; and to do all this with the help of Mendelian principles was an invigorating exercise to Hart, although to others it seemed nothing less than a *tour de force* of dubious utility. He was head and shoulders above the little thinkers on these matters, and he enjoyed these speculations with his whole soul. Almost his most recent work, an article in the new edition of the *Encyclopaedia Medica* on hermaphrodism in man, illustrates these features of his later work admirably.

Dr. Berry Hart was the writer of nine books and of more than seventy papers, and would therefore demand attention even if the work were not of the high standard it has just been shown to be. He was a literary man. In the first place, his articles, with whatsoever subject they dealt, were invariably written in strong readable English, terse, clear, arresting, forcible. In the second place, he scored two distinct successes with textbooks; the *Manual of Gynaecology* (written in collaboration with Freeland Barbour) has passed through many editions and has been translated into several European languages; and his *Guide to Midwifery* has appealed to the best minds amongst his colleagues and has been already fruitful in many directions. The *Manual* is now, after nearly forty years, quietly accepted as a textbook like many others; but in the year of its publication it stood out alone as a pioneer work establishing gynaecology as a true, self-contained, and scientifically founded speciality. But, in the third place, Hart was successful as the writer of what may justly be termed medical *belles-lettres*. His fascinating book called *Some Phases of Evolution and Heredity* came as a delightful surprise even to many who knew him well. He revealed in it literary grace, a power of epigrammatic description, delicate fancy, brilliant critical instinct, and genuine humour; yet on every page of it real facts of vital importance were being set forth. Take, for instance, his pregnant phrase, "man and woman are equipotential but not equivalent," or his summing up of eugenics, "it is not Nature's way," or his reflection, "in time Cupid, before he shoots, will look up the lovers' dossier," and read his chapter on men (such as Pepys) who have revealed themselves. The whole work teems with what may be called sportive marginalia on the scientific and semi-scientific books and beliefs of the time.

The third direction in which Berry Hart's work was fruitful beyond the average was that of teaching. In part his teaching was through his books and papers, and it was never of the coaching kind, attracting the student whose horizon was coterminous with the walls of the examination hall; but his oral and clinical teaching showed even more the absence of anything approaching the popular style. It appealed rather to the post-graduate or to the undergraduate with the post-graduate mind, who appreciated it to the full, even if for the time being he could not follow out the avenues of thought which were being opened up. The fact that an important but novel matter was not likely to be asked in an examination paper did not deter Hart from giving a whole lecture to it if he thought it deserved it. The desire to teach in this sort of fashion went with Hart to a medical society meeting and gave a sharpness to his criticism of papers read there which some were inclined to resent; but such comments from his tongue were rather to be regarded as compliments than as condemnations. The poor paper he left uncriticized, but for the one that had a spark of originality or of merit in it Hart had a word or two which showed how the spark might be converted into a flame, and he took the author (if he were willing) into the circle of those whom he delighted to engage in combat and measure swords with. It was considerations such as some of these referred to which no doubt led the College of Physicians to bestow upon Dr. Hart in 1918 the Cullen Prize, awarded every four years "for the greatest benefit done to practical medicine," and with that distinction one may suitably close this sketch of his life.

Sides to his life have been left untouched, amongst them his kindly relations with his patients, his devotion to Liberalism in politics and to his church (the United Free) in religion; but in the main the man, David Berry Hart, was such an one as has been indicated. He has left a widow and four children, two sons and two daughters.

WE regret to record the death of Dr. CLAUDE JOHNSON, which took place from pneumonia on May 15th at King's Heath. Dr. Johnson, who was the second son of Dr. C. J. B. Johnson of King's Heath, near Birmingham, was educated at Birmingham University, where he held office as secretary of the University Medical Society. After graduating M.B., Ch.B.Birmingham, and M.R.C.S., L.R.C.P. Lond. in 1906 he acted as resident medical officer at the Birmingham General Hospital, as assistant obstetric officer at Queen's Hospital, and as house-surgeon to the Moseley Hall Convalescent Hospital for Children. He took the diploma of D.P.H. in 1909. At the outbreak of war he was mobilized as a member of the Special Reserve, and served with the first Expeditionary Force during the retreat from Mons. Subsequently he left his field ambulance to act as sanitary officer in France, and during the latter part of the war he was stationed in India, where he contracted dysentery. After his return to England he joined his father in practice at King's Heath. His death, at the age of 36, is deplored by a wide circle of friends and patients. Great sympathy is felt for his widow, to whom he was married only twelve months ago.

SURGEON-MAJOR RALPH ROBERT SCOTT, R.A.M.C. (retired), died at Bath on June 1st, aged 88. He was born at Kiltegan, county Wicklow, on February 5th, 1832, took the L.R.C.S.I. in 1853, and entered the army as assistant surgeon in the 46th Foot on July 28th, 1854—sixty-six years ago. He became surgeon-major on March 1st, 1873, went on half-pay on July 28th of the same year, and commuted his half-pay three years later. In 1861 he took the L.K.Q.C.P., and the membership of the same college in 1879, after his retirement. He had a varied experience of the army, having served in four regiments—the 46th, 93rd, and 80th Foot, and the 8th Dragoons—as well as four spells on the staff. He served with the 46th Foot in the Crimea from November 8th, 1854, and was present throughout the siege and at the capture of Sebastopol, including the attacks of June 18th and September 8th, receiving the medal with clasp and the Turkish medal. In the Indian Mutiny he served with F Battery, Royal Horse Artillery, at the final capture of Lucknow in 1858, and with the 6th Dragoon Guards (Carabineers), in Sir Hope Grant's column, and in the Trans-Gogra campaign, receiving the mutiny medal with clasp for Lucknow.

THE *Pioneer Mail* reports the death at Lucknow on May 16th of Dr. MOHENDRA NATH OHDEDAR, one of the best known medical men in the North-West, now the United Provinces of India. He was 65 years of age, and had served for thirty years in the Provincial Civil Medical Service, holding the post of assistant surgeon of Allahabad for many years, and until he was promoted to the medical charge of a district he served as civil surgeon of Bara Banki, in Oudh. When he retired, about five years ago, he settled at Lucknow, where he speedily acquired a large practice. He was the first Indian to hold a commission in the Volunteers, serving as medical officer of the Allahabad Volunteer Rifles. He received the Indian title of Rai Bahadur for his services in 1892. His death was due to cerebral haemorrhage.

THE first Pan-Hellenic Congress of Hygiene and Demography will be held at Athens from April 25th to April 30th, 1921, under the presidency of Professor Phocas, simultaneously with the celebration of the centenary of Greek independence. There will be six sections represented: Public health, individual hygiene, military and naval hygiene, demography, infantile hygiene, and prophylactic hygiene. An international exhibition of hygiene and medical industry will be opened at the same time as the congress and will continue until June 25th. Further information concerning the congress and exhibition may be obtained from Dr. P. Rondopoulo, 14, Rue Nikiforon, Athens.

Universities and Colleges.

UNIVERSITY OF OXFORD.

DURING Commemoration it will be proposed to confer the honorary degree of D.Sc. upon Lieut.-General Sir Alfred Keogh, G.C.B., Rector of the Imperial College of Science and Technology, and upon his successor in the office of Director-General A.M.S., Lieut.-General Sir John Goodwin, K.C.B.

Captain Philip Walker and Captain Cecil Walker have offered some £2,000 to be added to the balance of the benefaction of the late Philip Francis Walker, and applied by the trustees towards the establishment and maintenance of a studentship in pathology.

The honorary degree of Doctor of Letters has been conferred upon Dr. Temistocle Zammit, C.M.G., professor of chemistry in the University of Malta and curator of the Valetta Museum, in recognition of his great services to the island of Malta by the discovery of antiquities and in the detection of the local causes of fever. Dr. Zammit is a member of the council of the Malta Branch of the British Medical Association.

UNIVERSITY OF CAMBRIDGE.

AT a Congregation held on June 12th the recommendation of the General Board of Studies for a University Lectureship in Medical Radiology and Electrology was approved.

The following medical degrees were conferred:

M.D.—A. N. Hodges.
M.B., B.CH.—J. L. Davies.
M.B.—E. Forrester-Paton, S. H. M. Johns, H. W. Scott, J. H. E. Moore.

The names of those medical men upon whom it is proposed to confer the honorary degree of LL.D. on June 29th are given in another column.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

THE following have after examination been admitted Fellows of Faculty:

N. S. Bruce, J. A. Conway, J. N. Cruickshank, J. Gracie, S. P. Meighan, J. H. Patterson, D. M'K. Reid, W. R. Snodgrass, I. D. Suttie, G. Young.

UNIVERSITY OF LONDON.

AT a meeting of the Senate on May 18th a diploma of psychological medicine open to all registered medical practitioners was instituted. The standard will be approximately that of the University of Cambridge for the corresponding diploma.

Dr. G. Newton Pitt has been appointed representative on the Senate of the City and Guilds of London Institute.

Mr. W. Foster Cross was recognized as a teacher of anæsthetics at St. Bartholomew's Hospital, and Mr. Gwynne E. O. Williams as a teacher of surgery at University College Hospital Medical School.

Dr. V. J. Woolley was appointed a member of the Board of Examiners in Pharmacology for the second examination for medical degrees, Part II.

The following were appointed examiners for the first and second examinations for medical degrees in the session 1920–21, the chairman being indicated by an asterisk:

Chemistry: *Dr. W. B. Tuck and Mr. H. C. H. Candy, or, failing him, Dr. H. R. Le Suer, together with the external examiners, Dr. H. R. Le Suer and Professor J. M. Thomson.
General Biology: *Dr. H. W. M. Tims and Dr. F. Drabble, together with the external examiners, Mr. A. Eastwood and Mr. J. T. Cunningham.
Physics: *Mr. W. H. White and Mr. F. Womack, together with the external examiners, Mr. A. Wood and Dr. F. L. Hopwood.
Anatomy: Professor J. E. S. Frazer and Professor W. Wright, together with the external examiners, Dr. W. L. H. Duckworth and Professor G. Elliot Smith.
Pharmacology: Dr. P. Hamill and Dr. V. J. Woolley, together with the external examiners, Professor H. J. Campbell and *Dr. Ransom.
Physiology: Professor J. Mellanby and Professor F. A. Bainbridge, together with the external examiners, Professor M. S. Pembrey and Professor J. S. Macdonald.

Applications for the University Chair of Physiology, tenable at King's College for Women, Household, and Social Science Department (salary of £800 a year), must be received by the Academic Registrar by June 30th, from whom further particulars can be obtained.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

AN Ordinary Council was held on June 10th, when Sir George Makins, President, was in the chair.

Results of Examinations.

Thirty-eight candidates admitted under the special war conditions passed the examination in anatomy and physiology for the Fellowship, and thirty-six were admitted under the ordinary conditions:

A. L. Abel, H. H. Bailey, J. A. Berry, O. Brenner, R. St. L. Brockman, D. J. Browne, A. G. Bryce, W. F. Christie, E. A. Coldrey, S. H. Cookson, V. M. Coppleson, H. Corsi, R. K. Dadachanji, R. M. Dannatt, W. M. Dickson, T. F. M. Dilworth, C. F. T. East, J. A. W. Ebden, D. J. Evans, G. I. Evans, W. C. Faull, A. W. Fawcett, L. R. Fifield, W. D. Galloway, A. T. Gibb, J. W. Gilbert, P. K. Gilroy, V. B. Gokhale, E. Grey, A. R. Gunne, S. G. Harrison, F. H. Healey, S. L. Higgs, J. P. Hosford, R. W. P. Hosford, F. Hudson, J. B Hunter, I. B. Jose, N. J. Judah, G. L. Keynes, J. LeM. Kneebone, E. A. Linell, S. D. Lodge, J. Love, W. M. H. McCullagh, A. C. Maconie, N. S. Macpherson, W. C. B. Meyer, P. J. Moir, O. G. Morgan, D. F. A. Neilson, R. L. Newell, H. G. Oliver, L. F. O'Shaughnessy, S. T. Parker, E. J. Partridge, D. H. Patey, C. V. Patrick, P. P. Pughe, F. H. Scotson, S. C. Shanks, E. S. S. Smalpage, J. F. H. Stallman, C. Sturton, C. H. Terry, C. P. Thomas, J. W. T. Thomas, A. H. C. Visick, E. Watson-Williams, H. P. W. White, H. A. B. Whitelocke, O. H. Williams, A. D. Wright, H. B. Yates.

Diplomas of Fellowship were granted to thirty-nine candidates, of whom Mr. W. E. Le Gros Clark had passed the examination in November, 1919, before attaining the required age of 25 years. The other successful candidates were:

S. Forsdike, N. F. Sinclair, J. W. Adams, G. Gushue-Taylor, B. S. Simmonds, L. N. Reece, W. H. Ogilvie, A. N. Hooper, C. S. L. Roberts, K. H. McMillan, F. A. Williamson, A. C. Perry, H. W. S. Wright, J. R. Griffith, W. T. Warwick, N. J. Wigram, F. C. Mason, J. B. Hume, L. G. Higgins, Muriel E. Landau, J. Joffe, J. Whittingdale, J. Gilmour, W. E. M. Wardill, M. A. W. Mooro, R. M. Handfield-Jones, A. L. Buchanan, N. Cantlie, J. H. Colt, H. R. Dew, R. Fowler, J. F. Gill, J. N. J. Hartley, R. A. Kerr, T. P. Noble, C. N. Smith, T. L. L. Sandes, M. H. Whiting.

Diplomas for the Licence in Dental Surgery were granted to twenty-one candidates.

Election of Examiners.

The following appointments were made:

FOR THE FELLOWSHIP.—*Anatomy*: J. Ernest Frazer, W. F. Haslam, Gordon Taylor, A. Ralph Thompson. *Physiology*: F. A. Bainbridge, J. B. Leathes, H. W. Lyle, A. R. Short.
CONJOINT EXAMINATION.—*Elementary Biology*: J. P. Hill, T. W. Shore. *Anatomy*: David Hepburn, F. G. Parsons, Arthur Thompson. *Physiology*: G. A. Buckmaster, H. E. Roaf. *Midwifery*: J. S. Fairbairn, Cuthbert Lockyer, G. D. Robinson, G. F. Darwall Smith. *Public Health*—Part I: Sir Frederick Andrewes. Part II: F. N. Kay Menzies. *Tropical Medicine and Hygiene*: G. C. Low, H. B. G. Newham.

Presentation of Diplomas to Honorary Fellows.

The President reported that the five surgeons who were elected Honorary Fellows of the College on February 12th last would attend to receive their diplomas on Thursday, July 8th, and that the diplomas would be presented to them at 7.30 p.m. on that day, after which they would be entertained to dinner in the College by the Council. The Honorary Fellows are Dr. A. Depage (Brussels), Dr. Gosset (Paris), Dr. P. Duval (Paris), Dr. Finney (Baltimore), Dr. C. Mayo (Rochester, U.S.A.).

The Services.

HONOURS.

C.B.E.

Temporary Lieut.-Colonel Ernest William White, R.A.M.C., has been appointed C.B.E. (Military Division) in substitution for the award of O.B.E. (Military Division) announced in the Supplement to the *London Gazette* of June 3rd, 1919.

Mentioned in Dispatches.

The name of Captain R. C. Clifford, D.S.O., M.C., I.M.S., attached 24th Punjabis, I.A., has been brought to the notice of the Secretary of State for War for gallant and distinguished conduct in the field (dated January 1st, 1919).

A fifth Supplement to the *London Gazette* of June 8th, published on June 11th, contains further lists of mentions for distinguished and gallant services and devotion to duty in the fields of operations indicated. The lists contain the following members of the medical profession:

France.—Temporary Lieut.-Colonel C. S. Myers, C.B.E., F.R.S., R.A.M.C. Captains C. S. O'Neill, O.B.E., R.A.M.C., and R. W. A. Salmon, O.B.E., R.A.M.C., T.F.

East Africa.—Lieut.-Colonel R. Milner-Smyth, O.B.E., S.A.M.C. Temporary Lieut.-Colonel J. Grinsell, O.B.E., S.A.M.C. Major (temporary Lieut.-Colonel) W. V. Field, O.B.E., S.A.M.C. Captains (acting Major) S. J. V. Furlong, O.B.E., R.A.M.C., S.R., (acting Lieut.-Colonel) J. D. Kidd, O.B.E., M.C., R.A.M.C., and H. L. Duke, O.B.E., Uganda Medical Service.

India.—Lieut.-Colonels P. St. C. More, O.B.E., I.M.S., and J. J. W. Prescott, D.S.O., O.B.E., R.A.M.C. Temporary Lieut.-Colonel Raghabendra Row, O.B.E., I.M.S. Major and Brevet Lieut-Colonel (temporary Colonel) F. A. F. Barnado, C.I.E., C.B.E., I.M.S. Majors (temporary Lieut.-Colonel) J. K. S. Fleming, O.B.E., I.M.S., G. D. Franklin, O.B.E., I.M.S., A. T. Frost, O.B.E., R.A.M.C., D. P. Johnstone, O.B.E., R.A.M.C., T. W. Minty, O.B.E., I.M.S., R. B. Nicholson, O.B.E., M.C., I.M.S., and H. W. Pierpoint, O.B.E., I.M.S. Captains (temporary Major) A. F. Babonau, O.B.E., I.M.S., (temporary Major) F. R. Coppinger, O.B.E., R.A.M.C., W. A. Frost, O.B.E., R.A.M.C., T. B. Heaton, O.B.E., R.A.M.C.(S.R.), C. H. Smith, O.B.E., I.M.S., (temporary Major) J. R. D. Webb, O.B.E., I.M.S. Temporary Captains J. Cairns, O.B.E., R.A.M.C., and S. K. Engineer, O.B.E., I.M.S.

North Russia.—Lieut.-Colonel T. McDermott, O.B.E., R.A.M.C. Captains (acting Major) W. N. W. Kennedy, O.B.E., R.A.M.C.(T.F.), and J. Renwick, O.B.E., R.A.M.C.

Salonica.—Captain (acting Major) B. L. Davis, O.B.E., R.A.M.C. (T.F.). Temporary Captain (acting Major) F. R. Brown, O.B.E., R.A.M.C. Drs. (Miss) E. B. Hollway, O.B.E., and (Mrs.) A. M. Livingstone-Learmonth, C.B.E., M.B., attached to R.A.M.C.

Siberia.—Major F. J. Collings, O.B.E., C.A.M.C.

Amendments.—In a list of amendments to mentions in dispatches the following are correctly described, and not as printed in the *London Gazette* of the dates indicated: *France*, temporary Lieutenant E. W. Carrington, R.A.M.C. (February 17th, 1915). *Italy*, temporary Captain S. J. Darke, M.C., R.A.M.C. (May 30th, 1918). *Salonica*, Captain T. Carnwath, R.A.M.C.(T.F.) (July 21st, 1917); temporary Captain G. Hardwicke, R.A.M.C., attached 3rd (H.C.) Field Ambulance R.A.M.C.(T.F.) (January 12th, 1920).

FOREIGN DECORATIONS.

The following decorations have been conferred in recognition of valuable and distinguished services rendered during the war:

By the King of Italy.

Order of the Crown of Italy.—Commander: Dr. Alexander Granville, C.M.G., British Red Cross Commissioner, Alexandria.

By the King of the Belgians.

Order of Leopold II.—Commander: Professor G. H. F. Nuttall, M.D., F.R.S. *Médaille du Roi Albert:* Colonel George Abraham Moore, C.M.G., D.S.O.

R.A.M.C. REGULAR OFFICERS' GRATUITY.

A NEW Royal Warrant lays down that Captains of the R.A.M.C. who are given permanent commissions in the corps subsequent to May 25th, 1920, must complete eight and a half years' total commissioned service in order to qualify for the gratuity of £1,000 payable under Article 597 of the Royal Pay Warrant to officers permitted to retire.

DEATHS IN THE SERVICES.

LIEUT.-COLONEL ALFRED ERNEST ROBERTS (retired) died in Guy's Hospital on May 20th, aged 60. He was born on December 3rd, 1859, the son of the late Mr. Andrew Thom Roberts, master printer, of Hackney. He was educated at Aberdeen, where he graduated M.B. and C.M. with honours in 1884, and at the London Hospital. He took the diploma of M.R.C.S. in 1887, and the D.P.H. at Cambridge in 1898. He entered the I.M.S. as surgeon on October 1st, 1887, passing first into and out of the Army Medical School at Netley; he retired as lieutenant-colonel on April 21st, 1908. After four years' military duty he went into civil employ in the North-West, now the United Provinces, in 1891; in May, 1899, he was appointed special health officer of Simla; in April, 1904, statistical officer to the Government of India in the sanitary and medical departments; and in September, 1904, secretary to the Director-General, a post which he held till his retirement. He served on the North-West frontier of India in the Hazara campaign of 1898, receiving the frontier medal with a clasp. He was the author of a short work on *Sanitation in India* (1891), and of a monograph on *Enteric Fever in India* (1906).

Brigade Surgeon Joseph Francis Barter, Madras Medical Service (retired), died at Ealing on June 1st, aged 87. He was the son of William Barter, of Fort William, co. Cork, was born in June, 1832, took the L.R.C.S.Edin. in 1858, and entered the I.M.S. as assistant surgeon on July 27th, 1859, attaining the rank of Brigade Surgeon in 1886, and retired on April 21st, 1890.

Inspector-General George MacLean, R.N.(ret.), died at Hampstead on May 31st. He was educated at Aberdeen, where he graduated M.A. in 1859 and M.B. and C.M. in 1862. Entering the navy soon after, he attained the rank of Inspector-General of Hospitals and Fleet on April 5th, 1898. He had received the Sir Gilbert Blane medal.

Medical News.

THE annual general meeting of the Research Defence Society will be held at the house of the Medical Society of London (11, Chandos Street, Cavendish Square) on Wednesday next at 3.45 p.m. The president, Lord Lamington, will be in the chair, and Lieut.-Colonel R. McCarrison, I.M.S., whose British Medical Association Lecture is published at page 822, will give a short address on vitamines and their relation to health. The attendance of persons interested is invited.

THE Incorporated Society of Trained Masseuses will hold a conference in London on June 24th, 25th, and 26th. The proceedings will be opened by an address on "The art of healing" by Professor Arthur Keith. Sir Charles Ballance will give a lantern demonstration on the healing process in nerves; Mr. H. Chapple, F.R.C.S., will discuss massage and exercises in the puerperium; and Mr. E. B. Clayton, M.B., will give a demonstration on crawling exercises for scoliosis. Particulars can be obtained from the secretary of the society, 157, Great Portland Street, W.1.

THE draft statutory regulations of the Board of Education, dated March 19th, dealing with medical inspections and treatment in secondary schools and other institutions for higher education, have been confirmed. Their chief provisions were summarized in our issue of April 24th (p. 581).

THE annual meeting for the election of officers and council of the Royal Society of Medicine will be held on Wednesday, July 7th. The council has nominated Sir John Bland-Sutton as president, and Dr. A. M. H. Gray, C.B.E., and Mr. W. Girling Ball as honorary secretaries.

THE Society of Tropical Medicine and Hygiene was founded in 1907, with Sir Patrick Manson as president and Sir Ronald Ross as vice-president. The King has now commanded that it shall be known as the Royal Society of Tropical Medicine and Hygiene. The society is not confined to medical men, and there are many veterinary practitioners among its Fellows, who now number 660. The president is Professor W. J. Simpson. The subscription has been raised to £1 11s. 6d. All particulars can be obtained from the Secretary, 11, Chandos Street, W.1.

DR. DAWSON TURNER has been reappointed extra medical electrician (for radium cases) to the Edinburgh Royal Infirmary for a further period to October, 1922.

THE Rubber Growers' Association offers a number of prizes (the first of £1,000) for the best ideas and suggestions for extending the present uses or encouraging new uses of rubber. Particulars can be obtained from the Secretary, at 38, Eastcheap, London, E.C.3.

THE Ministry of Food and the Ministry of Health announce that on and after June 13th an extra ration of sugar for a child under 2 years of age may be obtained by forwarding to the local food office a medical certificate stating that an extra ration is necessary. Formerly extra sugar could be obtained for such children only as were attending a child welfare centre; it is now available for others, and the certificates may be signed by the medical officer of the centre or by any other duly qualified practitioner.

A VACATION post-graduate course will be held at the North-East London Post-Graduate College (Prince of Wales's General Hospital, Tottenham, N.15) from Monday, July 19th, to Saturday, July 31st, inclusive. It will comprise demonstrations on clinical methods, including laboratory methods of the examination of cases in the mornings, and in the afternoons demonstrations on groups of illustrative cases, general hospital practice in the various departments, and clinical lectures and consultations. On Saturday mornings clinical demonstrations will be given in affiliated special hospitals. The fee for the course is three guineas, or two guineas for either week. Further particulars may be obtained from the Dean at the hospital, or at 19A, Cavendish Square, W.1.

A LECTURE given by Mr. F. L. Hoffman, LL.D., Statistician to the Prudential Assurance Company of America, at a meeting of the American Medical Association, of which he is an associate fellow, has been reprinted under the title *Is Leprosy Increasing?* As the result of a statistical inquiry Dr. Hoffman concludes that in the United States at the present time there are at least 250 cases, and possibly between 400 and 500. This estimate is smaller than the previous ones, but the available evidence seems to justify the conclusion that the disease is very slowly increasing, and that new foci of leprosy are being formed, and constitute a serious menace; during the last four years nearly 250 cases have been reported. Provision has been made by Congress for the erection of a "leprosarium" in Florida, but Dr. Hoffman believes that at least three new institutions are required. It is suggested that the time is opportune for holding another leprosy conference in continuation of the international meetings held at Berlin in 1897, and in Bergen in 1909. In appendices are collated the most recent statistics of leprosy in India, Cuba, Porto Rico, Brazil, Venezuela, Hawaii, and the Panama Canal zone.

A GENERAL meeting of the Tuberculosis Society of Great Britain and Ireland will be held at Cardiff on Saturday, June 26th, when papers will be read by Dr. J. Brownlee, Dr. H. de Carle Woodcock (president), Dr. H. Ellis, and Dr. A. Sandison. There will be a dinner in the evening at which the English members attending will be guests. On the following day members will have an opportunity of visiting the Talgarth Sanatorium, Breconshire, or the Glan Ely Hospital, Cardiff, as may be more convenient. Full particulars can be obtained from Dr. F. J. C. Blackmore, 39, Woodland Terrace, Old Charlton, S.E.7.

A VIOLENT outbreak of plague has occurred at Czernovitz, and many hundred deaths have been reported.

PROFESSOR GIUSEPPE GUICCIARDI of Reggio Emilia has assumed the editorship of the well known journal of psychiatry, *Rivista Sperimentale de Freniatria*, which had been edited for nearly fifty years by the late Professor Augusto Tamburini.

Letters, Notes, and Answers.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

As, owing to printing difficulties, the JOURNAL must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.

In order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2631, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra, Westrand, London*; telephone, 2634, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone, 4361, Central).

QUERIES AND ANSWERS.

"F. W." asks for experience of the use of motor scooters for general practice.

TREATMENT OF SCIATICA.

A CORRESPONDENT has been stimulated by reading Dr. Wilfred Harris's lecture (BRITISH MEDICAL JOURNAL, May 22nd, p. 693) on the treatment of trigeminal neuralgia by the injection of alcohol, to ask whether sciatica could be treated by an injection of alcohol or distilled water into the sciatic nerve.

*** We referred the question to Dr. Harris, who has been good enough to reply as follows: Alcohol must never be used for injection into the sciatic nerve for sciatica, owing to the severe paralysis of all the leg muscles below the knee that it would cause. I sometimes use Lange's method of massive saline injections into the nerve in the neighbourhood of the notch. The saline acts only as a mechanical agent in separating the nerve bundles and breaking down adhesions. 2 per cent. novocain is first injected into the nerve in order to reduce the pain of the saline injection.

INCOME TAX.

W. B. became a director of a limited company in May, 1919, at a fee of £65 a year. He received £65 in May, 1920, and this sum has been assessed to income tax as for the year to April, 1920, and reckoned as part of his income for that year. Is this correct?

*** Such fees are assessable according to the amount receivable for the year of assessment, and that would be determined by the resolution under which "W. B." received his appointment. For instance, if it provided that he should be appointed as from May 5th, 1919, at a fee of £65 per annum, then the amount of income assessable for the year commencing April 5th, 1919, would be eleven-twelfths of £65—say £60; if the result be to raise the total income above any particular limit, the legal effect is to justify further assessments to adjust the original ones made before the additional income was dealt with by the authorities. "W. B." is liable to include the £65 in his statement of income for 1920–21, but is entitled to have any future assessment restricted to the appropriate proportion of the year if and when he should give up the directorship.

LETTERS, NOTES, ETC.

RATS AND PLAGUE.

WE are indebted to Sir John Tweedy for the following note:—With reference to Lieut.-Colonel R. Cobb's note in the BRITISH MEDICAL JOURNAL of June 12th, your readers may be interested to know that in a delightful little book entitled *The Land of the Two Rivers*, by Mr. Edwyn Bevan, published two or three years ago, there is the following reference of the destruction of Sennacherib's army:

"On the borders of the desert between Palestine and Egypt the Assyrian army was mowed down by a sudden pestilence. The remnant had to take the homeward road as best it could. Long after, in Egypt, Herodotus was told the story how Sennacherib had come against Egypt, and how Pharaoh prayed to the god Ptah, and a horde of rats had attacked the Assyrian army and gnawed through their straps and bowstrings, so that they had to flee home. He was shown a statue of the Ethiopian Pharaoh holding a rat in his hand. The sculptor may have intended it as a symbol of plague."

In a footnote Mr. Bevan adds: "Apollo Smintheus, the sender of plague, is represented with his foot upon a rat (*Pausanias*, x, 12). When the Philistine cities are visited by the bubonic plague they pacify Yahweh by offering golden rats and golden bubos (I Samuel, vi)."

THE VALUE OF COUNTER-IRRITATION.

DR. W. J. MIDELTON (Bournemouth), in the course of a note on this subject, writes: In support of my view that counter-irritation of the skin promotes destruction and elimination of germs I append notes of the following case: A woman of 44, whose father and two sisters had rheumatic fever and whose mother was consumptive, and who was the fourteenth child of eighteen, was as a girl physically and mentally weak, and did not walk until the age of ten. From infancy the left leg was shorter and weaker than the right, and she had pain in the left hip and knee. After her parents' death she earned her living as a dressmaker, and for five years was treated as an out-patient for (she said) "nervous and bilious attacks." In 1919 the left leg became much weaker, and she could only walk a short distance aided by sticks. She had "nerve storms" and "neuritis," and was wont to cry for hours at a time. When I first saw her on October 20th, 1919, she was thin, pale, and edentulous, with prominent eyes; the left leg was shorter and smaller than the right. The left hip and knee exhibited chronic osteo-arthritis, but were fairly movable. There were no definite physical signs in the lungs, but there was a well-marked systolic murmur. I treated her by making small dots (a few at first, increasing to thirty twice weekly) on the back over and at the sides of the vertebrae. She improved steadily in every way and can now walk two miles without a stick, she sleeps better, the pain and swelling in her knee are nearly gone, and she is able to do her work.

In my small book, *Continuous Counter-irritation in the Treatment of Nervous and other Diseases*, I called attention to the fact that a patient's troubles are by no means over when all the teeth have been removed. There are in the system thousands of small foci impossible to deal with except by general measures. In continuous counter-irritation I have satisfied myself that I have found a very potent means of reaching them. My patient was shown at a meeting of the local medical society on April 14th, 1920.

TREATMENT OF PSOROPTIC MANGE.

DR. J. S. MATTHEWS (Cape Town) writes: May I offer a protest against the unreasonably complicated laboratory method of dealing with the *Psoroptes cuniculi* occurring in rabbits' ears, detailed by Mr. J. E. Mellor on p. 316 of your issue of February 28th? All that is really necessary to effect a complete, painless, and speedy cure is to remove the flakes with forceps and swab thoroughly with 1 per cent. potassium permanganate. This is usually sufficient, as everything will be dead. Inspect a day or two later and remove any flakes which may remain, and reswab merely as a precaution. A third application was never required and the disease never recurred in the same stock. The hutches were disinfected, of course.

DRIED EGGS.

DR. ALETHIA J. BOLTON (Nottingham) writes: In my experience there has been a great increase in the number and severity of cases of indigestion in general practice during the last two or three years. This is attributed by patients to "war bread or margarine, low meat ration," etc.—in my opinion quite erroneously, as the reduced diet has on the whole benefited health. There must, however, be some cause, and I am anxious to know whether the "liquid eggs" so largely used in the manufacture of shop cakes, etc., should be blamed. I understand that the "dried eggs" are not toxic, but should like to know definitely, as I believe it to be a matter of grave importance.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 37, 41, 42, 43, 44 and 45 of our advertisement columns, and advertisements as to partnerships, assistantships, and locum tenencies at pages 38, 39, and 40.

THE following appointments of certifying factory surgeons are vacant: Buckhaven (Fife), Dulais Valley (Glamorgan), Forkhill (Armagh).

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NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.